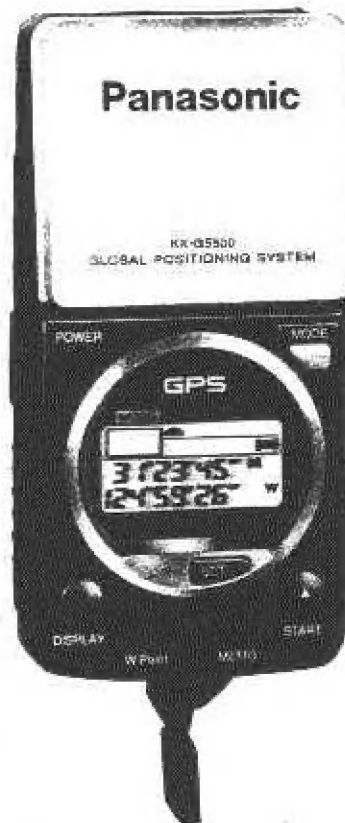


# Panasonic

HANDHELD GPS RECEIVER

MODEL NO. **KX-G5500**

## Operating Instructions



Please read this manual thoroughly in order to use this GPS receiver properly.  
Retain this manual for future reference.

Thank you for purchasing the Panasonic KX-G5500 Hand-Held GPS Receiver. This unit has been designed to provide you with many years of exceptional performance.

You may use this GPS receiver in the following situations.

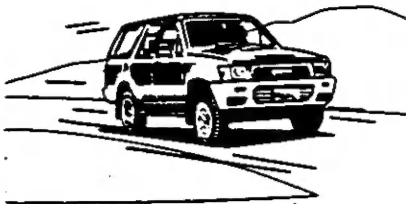
**At a Mountain**



**When you go mountain-climbing or skiing,**

you can find your exact position even if you get lost on a lonely mountain because of the fog.

A position of a mountain hut can be entered beforehand.



**When you take a trip by car,**

you can find the exact position, bearing and range to your destination.



**When you find beautiful scenery during hiking,**

you can find the latitude and longitude and save the data for future use.

GPS or Global Positioning System allows you to find your present position on land, sea, or in the air. Its State-of-the-ART design does not have many of the drawbacks associated with the older LORAN C system. It is usable anywhere in the world and its host of navigational functions make it of prime use to navigators everywhere.

---

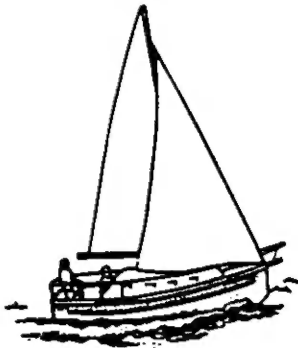
### **At Sea**



**When you want to get back to your favorite fishing spot,**

you can find and save the latitude and longitude of this point.

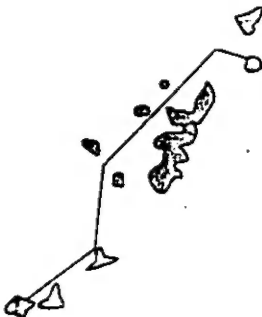
When you reach this point next time, an arrival confirmation tone sounds.



**When you are sailing,**

you can navigate while confirming your present position.

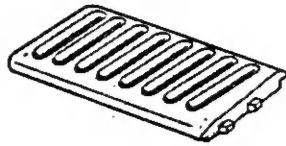
The position of a lighthouse or harbor can be saved in the GPS receiver beforehand.



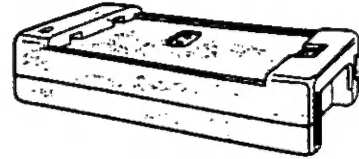
**When you sail along the route you planned,**

you can find the cross track error from the route and revise the heading.

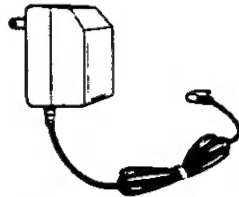
## Accessories



Rechargeable Nickel Metal  
Hydride Battery Pack .....one



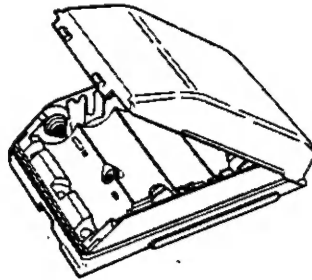
Battery Charger .....one



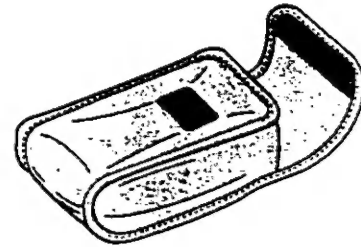
AC Adaptor  
(For Battery Charger) .....one



Cigarette Lighter Plug Adaptor  
(For Battery Charger) .....one



Battery Case for AA Alkaline  
Batteries .....one  
(Batteries not included)



Carrying Case .....one

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Basic Operation		2
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Function Modes	Navigation	4
	Confirmation	5
	Program	6
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#### **Important Notice**

This device is designed as an aid to navigation only.

The performance of this device can be affected by many factors, such as but not limited to, environmental conditions, improper handling, satellite signal availability, etc. It is the user's responsibility to follow good navigational practices and to utilize common sense at all times. Use of this device does not relieve the user of these responsibilities.

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# Precautions

---

Do not leave this unit in the following places.

- Extremely dusty and humid place.  
(cause of malfunction)

- Intensely vibratile place.  
(cause of malfunction)

- A place subject to strong direct sunlight for a long period of time.  
(cause of malfunction and may cause deformation of the LCD or Case)
- Inside a parked car which is exposed to direct sunlight.  
(cause of malfunction and deformation)
- This unit was designed for use in ambient temperatures between 14 and 122 degrees F.  
(-10 and 50 degrees C)
- Severely cold place.  
(cause of malfunction and may affect the LCD)



---

## Handling Instructions

- Do not take this unit or battery charger apart.  
(cause of malfunction)

- Do not cut the cord.  
(cause of an electric shock)

- Do not drop or give strong shock to this unit.  
(cause of malfunction and/or damage)

- Do not short-circuit the re-chargeable battery.  
(cause of malfunction)

- Do not drop into water.  
(cause of malfunction)

### Important Notice

This device is designed as an aid to navigation only. The performance of this device can be affected by many factors, such as but not limited to, environmental conditions, improper handling, satellite signal availability, etc. It is the user's responsibility to follow good navigational practices and to utilize common sense at all times. Use of this device does not relieve the user of these responsibilities.

# GPS Technology

---

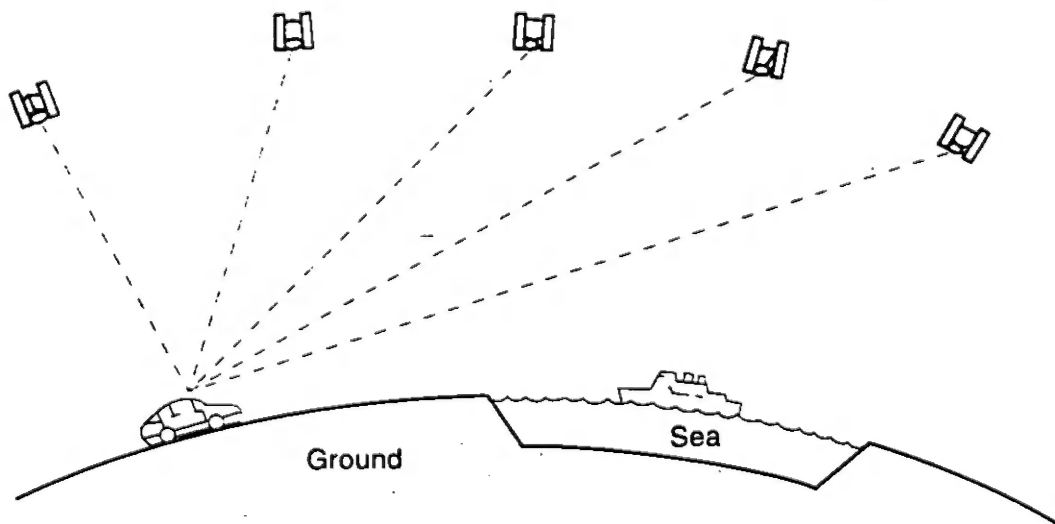
## GPS Satellites

GPS satellites orbit the earth at an altitude of 12,539 miles (20,180 km). These satellites are launched and maintained by the U.S. Department of Defense.

GPS is a system where receivers on land, sea, or in the air can receive signals from 3-4 satellites to calculate an accurate position (latitude, longitude, and altitude).

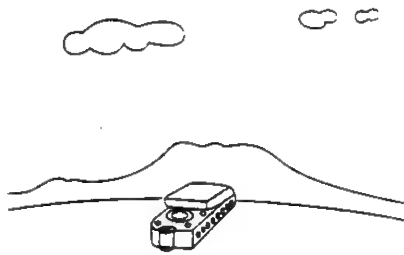
Once all 24 of the satellites have been launched and configured in 6 orbits (each orbit having 4 satellites) the system will be fully implemented. Today, measurements may not be possible at all times as the system does not yet have all of the satellites in place. As of April, 1992, 18 of the 24 satellites are in place and are in operation. The scheduled completion of the system is set for mid 1993.

Depending on the configuration and completion of the GPS Constellation, the accuracy of a position fix may vary. [Altitude measurements may differ by as much as  $\pm 0.1$  mile (150m)].



---

## Measurement

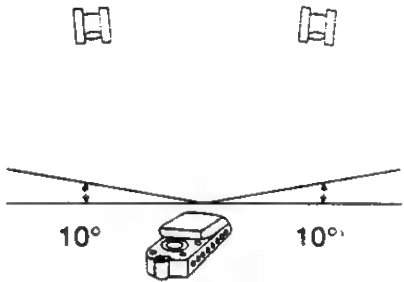


### A good place for measurement.

An open place where you can see all over the sky with no obstacles.

(Measurement can not be done indoors.)

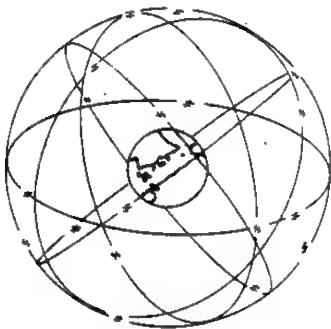
Measurement may not be done where there is a strong electric field such as near a broadcasting antenna.



### Direction of Antenna.

Place the antenna unit horizontally.

This unit can receive signals from satellites above an angle of 10 degrees elevation.



### Notice of Measurement

#### Availability.

Each day there will be periods of time when acquiring a fix will be difficult or impossible. This time varies from day to day and from location to location due to the orbiting nature of the satellites. Soon this condition will be corrected once all 24 of the GPS satellites have been launched and the system declared fully operational by the U.S. Department of Defense.

# Location of Controls

## Operation

### Antenna

Receives the GPS signals from the satellites.

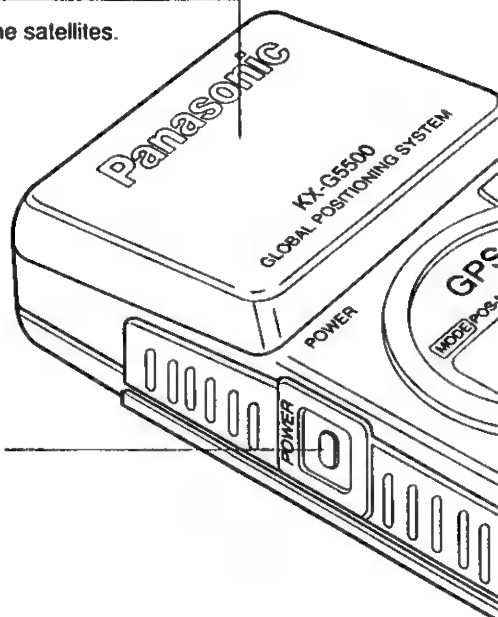
### The POWER ( ) Key

Turns the power on and off.

### The Liquid Crystal Display

### The DISPLAY ( ) Key

Switches the LCD screen.



### The MODE ( ) Key

Each press changes the operation mode as follows. (P.42)

→ POS → NAV → CONF → PROG

### The LIGHT/SET ( ) Key

One press makes the LCD brighter (screen light on), another press makes it darker (screen light off). This key also is used to save a numerical value (P.71).

### The START ( ) Key

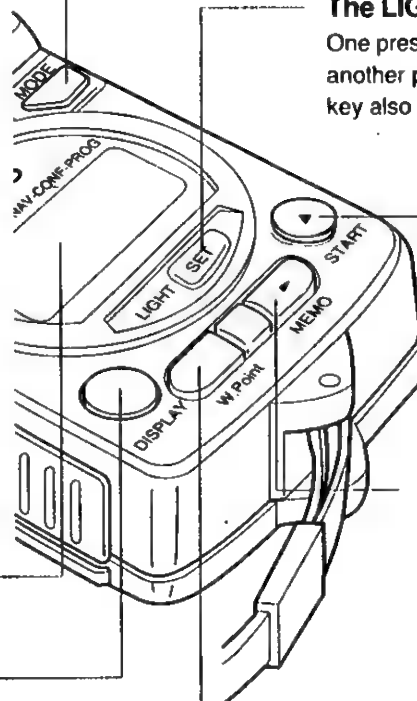
Starts calculation of your current position (P.45) or for entering a numerical value of latitude/longitude (P.70).

### The MEMO ( ) Key

Enters the calculated data of latitude and longitude (P.48), or for selecting a field for a numerical value (P.71).

### The W. POINT ( ) Key

Selects WP number where the data of latitude/longitude are saved.



## Location of Control (cont.)

### Display Screen

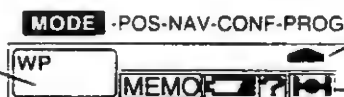
#### Waypoint (WP)

#### Number Display

Displays WP number which stores latitude/longitude.

#### MODE Indicator

"▲" mark shows which operation mode is used.



#### Satellite Indicator

It flashes while receiving signals from GPS satellites.

#### Low Accuracy Alarm Indicator

Appears when accuracy of calculated data is low.

#### Low Battery Alarm Indicator

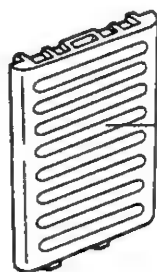
When the batteries are depleted, it flashes.

#### Memory Indicator

Appears when the calculated latitude/longitude are stored.

Displays the calculated numerical value.

# Installing the Rechargeable Battery



Rechargeable Battery

- Charge the rechargeable battery using the supplied battery charger before use.
- After completion of battery charging, this unit will function for approx. 80 minutes. [continuous use, screen light is off, ambient temperature at 68°F (20°C)].
- Nickel Metal Hydride Battery technology is used for the rechargeable battery.

1

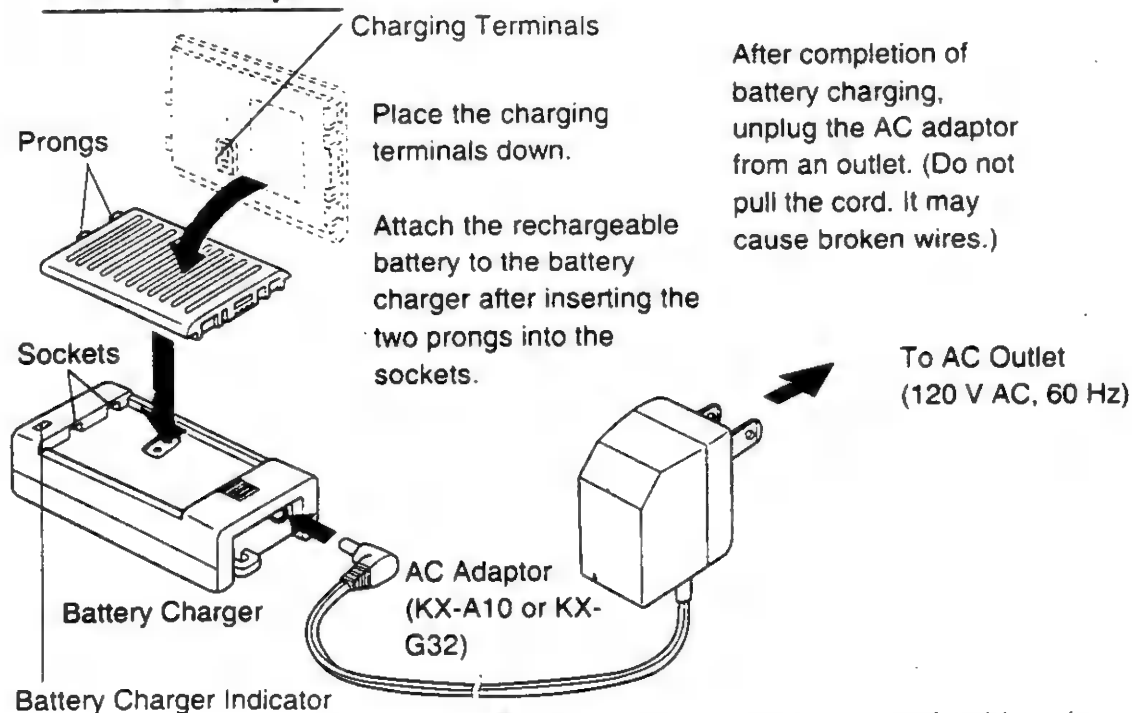
Setting Up the Unit

## Charging the Rechargeable Battery

Charge the battery for approx. 10 hours at temperature 50°F-95°F (10°C-35°C).

To prevent overcharging, the battery charger indicator will go out in approx. 15 hours and stop charging.

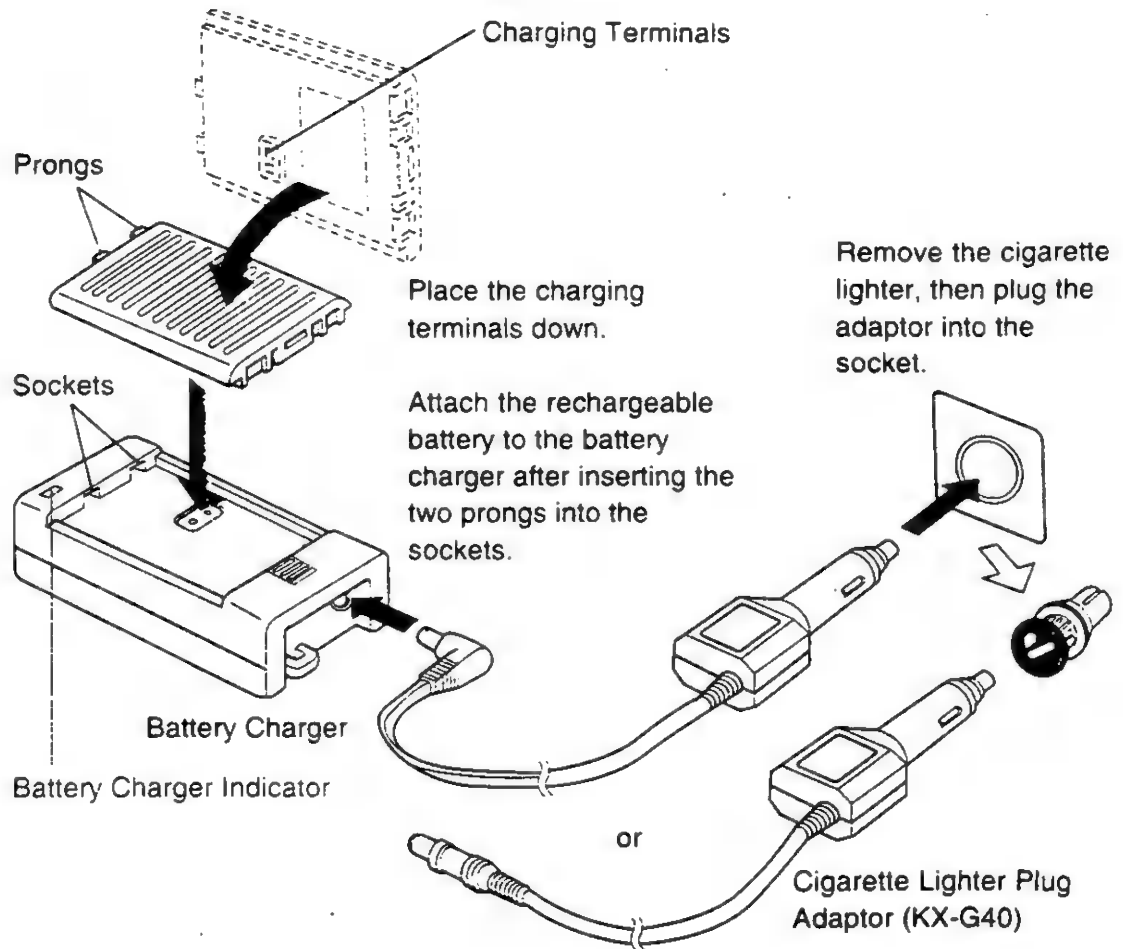
### With AC Adaptor



- Use the supplied AC adaptor for this unit.
- Using a different AC adaptor will cause malfunction.

## Installing the Rechargeable Battery (cont.)

### With Cigarette Lighter Plug Adaptor



Charge with an external 13.8 V (11.7~16.6 V) DC power source.

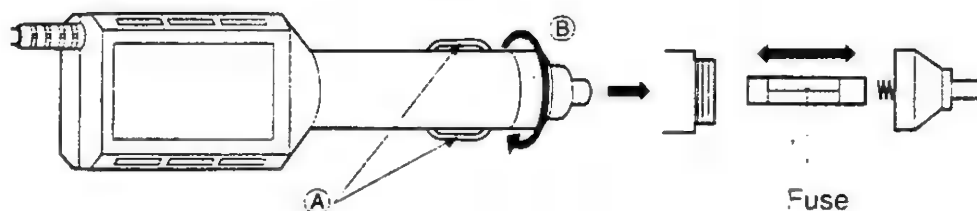
## Fuse Replacement

If the in-line fuse of Cigarette Lighter Plug Adaptor has blown, change it with the new one.

If it blows again, have your Cigarette Lighter Plug Adaptor checked.

### ● To remove the fuse;

Push the clips ① and while keeping them pushed, turn the end ② as shown.



### ● To Install the fuse;

Reverse the above procedure.

Use a fuse (125 V, 2 A).

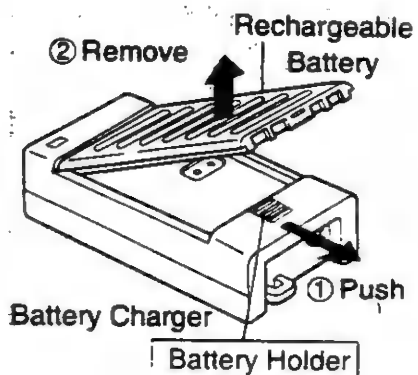
### Note:

- Remove the unit from the cigarette lighter socket when not in use.
- For reason of the different construction of cigarette lighter socket, the adaptor will not fit into some kinds of cigarette lighter socket.



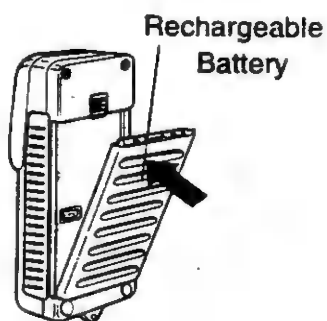
## Installing the Rechargeable Battery (cont.)

### Remove Rechargeable Battery from Battery Charger



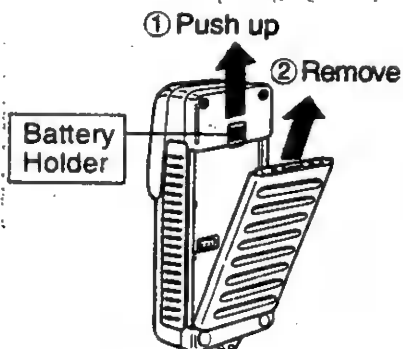
- Release the rechargeable battery by pushing the battery holder in the direction of the arrow (①).
- Remove the rechargeable battery from the battery charger (②).

### Attach Rechargeable Battery to Main Body



Place the rechargeable battery into the receiver. Push the rechargeable battery until a click is heard.

### Remove Rechargeable Battery from Main Body



- Push up the battery holder to release the rechargeable battery.
- Grasp the rechargeable battery and lift it from the receiver.

# Installing Alkaline Batteries



- This unit will operate for approx. 5 hours using 5 AA alkaline batteries. [continuous use with Panasonic alkaline batteries, screen light is off, at 68°F (20°C)]
- We recommend you to use of alkaline batteries. (AA size, LR6, 1.5 V)
- This unit will operate for approx. 2 hours using conventional manganese batteries. [continuous use with Panasonic batteries, at 68°F (20°C)]

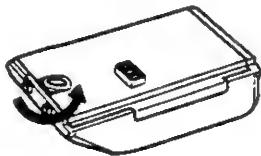
1

Setting Up the Unit

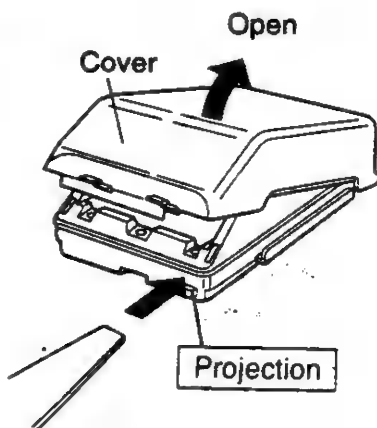
## Installing Alkaline Batteries into Battery Case

1

Loosen the screw on the back side of the battery case.



2



Open the cover of the battery case by gently prying at the projection. Lift the cover, as shown, to open.

## Installing Alkaline Batteries (cont.)

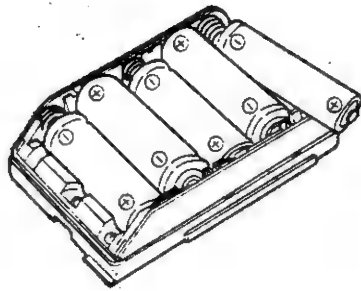
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**1**

Setting Up the Unit

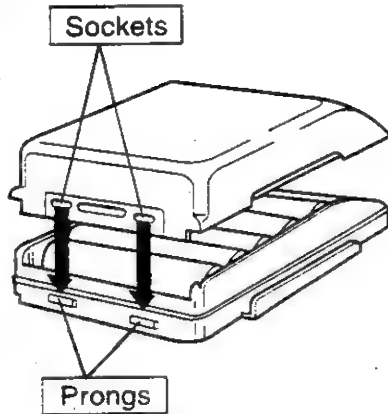
**3**

Install batteries observing with the correct polarity indication on the battery case.



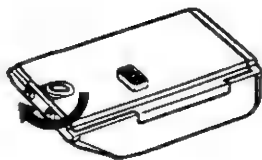
**4**

Place the cover on the battery case by putting the prongs into the sockets.



**5**

Tighten the screw on the back side of the battery case.



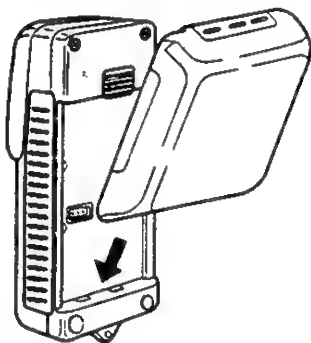
## Attach Battery Case to the Receiver

**1**

Setting Up the Unit

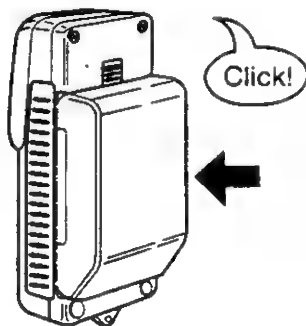
**1**

Attach the battery case to the receiver.



**2**

Push the battery case until a click is heard.



# Instructions for Battery Use

## Rechargeable Battery

### Charging Battery

- Please charge at an ambient temperature between 50°F-95°F (10°C-35°C).
- Charge at least once every 6 months even when not in use.
- If you do not use it for a long period of time (more than 6 months), the battery life will be shortened.
- Do not recharge after charging. It may cause overcharging and shorten the battery life.

### Where to Store

- Do not leave this unit in a location subject to direct sunlight or near heat sources. It may cause an electric discharge (the electric amount will diminish naturally even when not in use.) and shorten the battery life. Keep it in a cool place.
- Remove the rechargeable battery from the main body when you do not use it for a long period of time.

### Handling Instructions

- Please avoid the following:
  - Throw into a fire.
  - Open the battery pack.
  - Short-circuit terminals
  - Use other battery charger.
- Do not drop the battery pack, because it may break or shorten the battery life.

### Battery Life

- You can charge the NiMH battery repeatedly approx. 360 times. When the life of the battery becomes extremely short even after charging for 10 hours, replace it.

---

## Alkaline Battery

Using alkaline batteries improperly may cause leakage or corrosion.

Please follow these rules listed below.

- Do not mix old and new batteries.
- Do not mix different types of batteries. The same shape battery could have different voltage.
- Do not short-circuit, disassemble, heat up or throw into a fire.
- Install the batteries correctly as the indication shows.
- Remove the batteries when not in use for a long period of time.
- Remove and dispose of the batteries when they are depleted.
- If battery leakage occurs, clean it out completely.

### Caution:

To reduce the risk of fire or injury to persons, read and follow these instructions.

1. Use only the battery(ies) instructed.
2. Do not dispose of the battery(ies) in a fire. The cell may explode. Check with local codes for possible special disposal instructions.
3. Do not open or mutilate the battery(ies). Released electrolyte is corrosive and may cause damage to the eyes or skin. It may be toxic if swallowed.
4. Exercise care in handling batteries in order not to short the battery with conducting materials such as rings, bracelets, and keys. The battery or conductor may overheat and cause burns.
5. Do not attempt to recharge the battery(ies). The batteries may leak corrosive electrolyte or explode.
6. Do not attempt to rejuvenate the battery(ies) by heating them. Sudden release of the battery electrolyte may occur causing burns or irritation to eyes or skin.

## Instructions for Battery Use (cont.)

---

7. When replacing batteries, all batteries should be replaced at the same time. Mixing fresh and discharged batteries could increase internal cell pressure and rupture the discharged battery(ies). (Applies to products employing more than one separately replaceable primary battery.)
8. When inserting batteries into this product, the proper polarity or direction must be observed. Reverse insertion of batteries can cause charging, and that may result in leakage or explosion. (Applies to products employing more than one separately replaceable primary battery.)
9. Remove the batteries from this product if the product will not be used for a long period of time (several months or more) since during this time the battery could leak in the product.
10. Discard "dead" batteries as soon as possible since "dead" batteries are more likely to leak in a product.
11. Do not store the batteries in high-temperature areas. Batteries that are stored in a freezer or refrigerator for the purpose of extending shelf life should be protected from condensation during storage and defrosting. Batteries should be stabilized at room temperature prior to use after cold storage.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Consult the dealer or an experienced radio/TV technician for help.



# **Basic Operation**

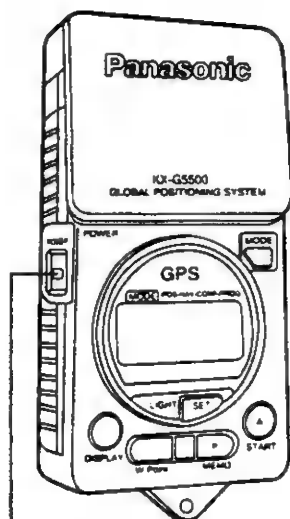
## **GPS Receiver Setup**

**2**

Basic Operation

1. How to Initialize
2. Adjusting Datum to Regional Standards (Func 1)
3. Adjusting to Local Time (Func 2)
4. Programming Continuous or Single Calculation (Func 3)
5. Changing Units:
  - 1) Latitude/Longitude
  - 2) Altitude
  - 3) Distance and Speed
6. Collecting an Almanac

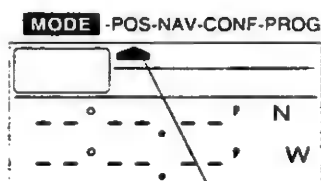
# How to Initialize the Unit



POWER key

Press the **POWER** key to turn the receiver on.

- A Long beep is heard and the POS mode is set.



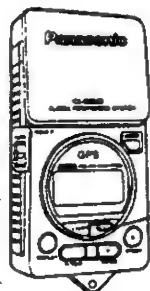
(Initial display)

Indicator

Press the **POWER** key to turn the receiver off.

- When you turn the power on after one calculation, the last screen on POS mode will be displayed.

## Using the Screen Light



LIGHT/SET key

Pressing the **LIGHT/SET** key after pressing the **POWER** key turns the screen light on. Pressing the **LIGHT/SET** key again turns the screen light off.

- When the screen light is on:

The rechargeable battery will last for approx. 65 minutes. [in continuous use, at 68°F (20°C)]

Alkaline batteries will last for approx. 220 minutes. [in continuous use, at 68°F (20°C), Panasonic alkaline battery]

# Adjusting Datum to Regional Standards

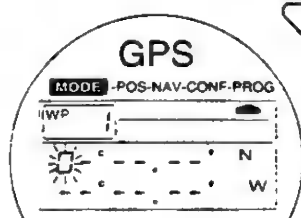
Sea charts or maps are drawn by different standards in every country. These standards are different from the standard of information obtained from the GPS satellites.

When using this unit in a foreign country, the datum number in that specific region should be selected to get more accurate numerical value.

2

Basic Operation

1



Press the MODE key until the PROG mode is accessed.

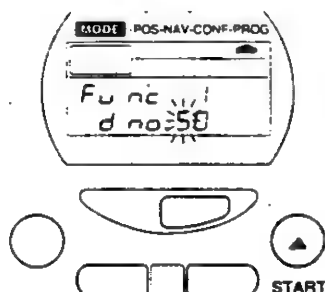
2



Press the DISPLAY key 4 times.

- "Func 1" (Func. 1) will be displayed and the number in tenth's place of the datum number will flash.
- d no. (dno.) ..... Datum Number (page 95)  
[Default is 00 (WGS) 84]

3

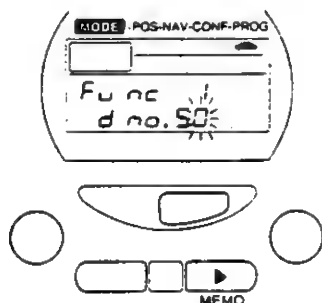


Press the START (▲) key to select the number in tenth's place.

- Each press makes the number advance as follows.

0 → 1 → 2 → ..... 9 →

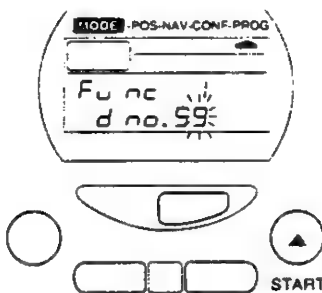
4



Press the MEMO (▶) key.

- The flashing number in the tenth's place will be lit.  
The number in the one's place of the datum number will begin to flash.

5



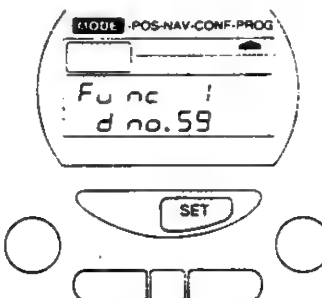
Press the START (▲) key to select the number in the flashing slot.

- Each press makes the number advance as follows.

→ 0 → 1 → 2 → ..... 9 →

- Datum numbers are 00-92.

6



Press the SET key.

- Entry completion beep will sound. Flashing will stop.

**Note**

- Datum Number

Refer to page 95 "World Datum List" for a datum number for a specific region.

Please select your local datum number.

00 (WGS 84) is the default setting for this unit.

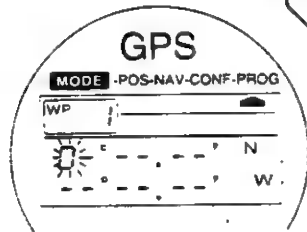
# Adjusting to Local Time

Local time may be displayed by entering the time difference between UTC (Universal Time Coordinated) also known as GMT (Greenwich Mean Time) and local standard time.

2

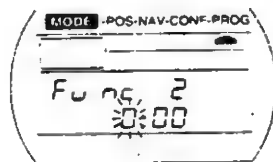
Basic Operation

1



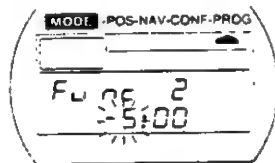
Press the MODE key until the PROG mode is set.

2



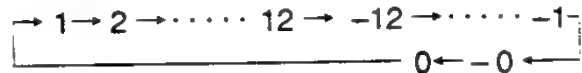
Press the DISPLAY key until "Func 2" (Func 2) is displayed and the number in the hours field flashes. (page 88)

3

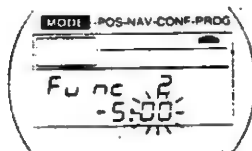


Press the START (▲) key until the desired offset from U.T.C. appears.

- Each press changes the number as follows.



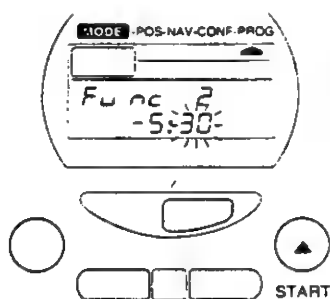
4



Press the MEMO (▶) key.

- The number in the hours field will be displayed and the number in the minutes field will begin to flash.

5

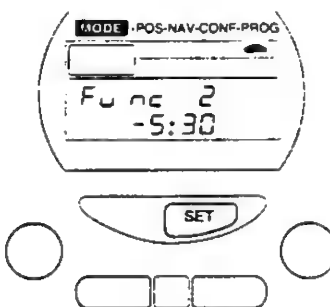


Press the START (▲) key to select the number in the minutes field.

- Each press changes the number as follows.

→ 00 → 30

6



Press the SET key.

- Entry completion beep will sound. Flashing will stop.

**Note**

- 0:00 (UTC) is the default setting.  
Enter the time difference from UTC to the Local Time Zone.
- Refer to page 88 "World Time Difference Table" to get the time difference from UTC.

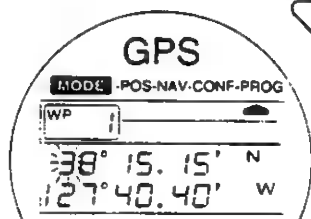
# Programming Continuous or Single Calculation Mode

Either Continuous or Single Calculation may be selected.  
The Single Calculation Mode affords greater battery life.  
When the single calculation mode is set, you have to press the START key everytime in order for this unit to calculate.  
Continuous calculation is selected when shipped.

Basic Operation

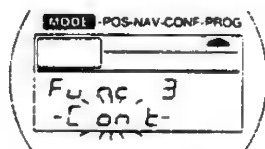
2

1



Press the MODE key until the PROG mode is set.

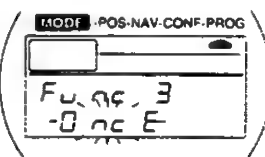
2



Press the DISPLAY key until "Func 3" (Func 3) is displayed.

- The present setting will flash.
- "Cont" (Cont): Continuous Calculation
- "Once" (Once): Single Calculation

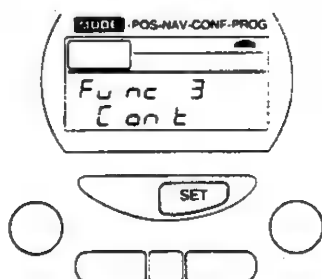
3



Press the START (▲) key to select "Once".

- "Cont" and "Once" will be toggled.

4



Press the SET key.

- Entry completion beep will sound. Flashing will stop.

**Note**

- Continuous Calculation  
Once a calculation is started by pressing the START key, the outcome of calculation will be automatically displayed in about every 3 seconds, and the data will be renewed with the latest one.
- Single Calculation  
Press the START key every time this unit calculates. The power will be automatically off when no key operation is made for two minutes after the outcome of calculation was displayed.
- COG, SOG, ETA and ETE will not be activated when using this unit in "Single Calculation."



# Changing Units of Latitude/Longitude

The units of latitude and longitude can be changed.

"° ' " (Degrees, Minutes, Hundredths of Minutes)

"° ' " (Degrees, Minutes, Seconds)

33° 34.50' N  
130° 25.25' W



33° 34' 30" N  
130° 25' 15" W

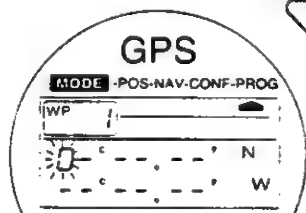
2

Basic Operation

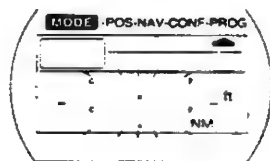
1



Press the MODE key until the PROG mode is set.



2

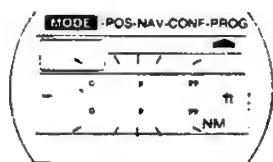


Press the DISPLAY key until the display at the left appears.

- The latitude and longitude unit figures which are currently selected will flash.



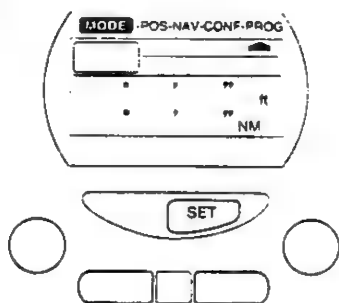
3



Press the START (▲) key to toggle the units.



4



Press the SET key.

- Entry completion beep will sound. Flashing will stop.

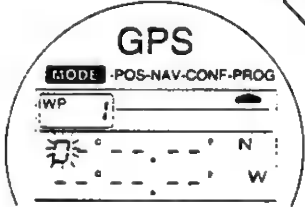
**Note**

- When you change units, the outcome of calculation for latitude and longitude entered in Waypoint will be automatically displayed in the new units.
- To discontinue this operation, press the MODE key to switch to the POS mode.

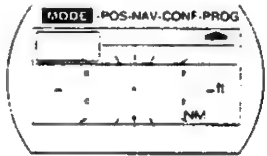
# Changing Units of Altitude

You can select "m" (meter) or "ft" (feet) as the units of altitude.

- Basic Operation**
- 1**

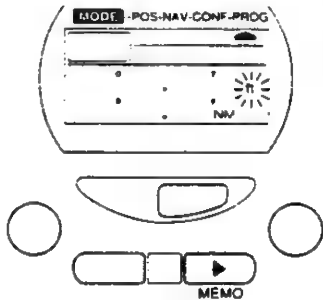


Press the MODE key until the PROG mode is set.
  - 2**



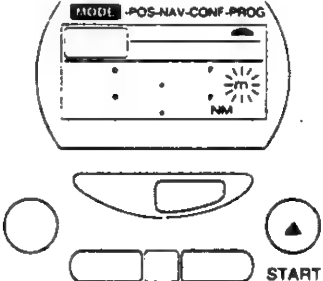
Press the DISPLAY key until the display at the left appears.

    - The latitude and longitude unit figures which are currently selected will flash.
  - 3**



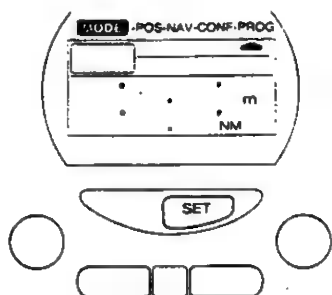
Press the MEMO (▶) key.

    - The altitude unit (feet, ft) which is currently selected will flash.
  - 4**



Press the START (▲) key to toggle the unit from feet to meters (m).

5



Press the SET key.

- Entry completion beep will sound. Flashing will stop.

**Note**

- When you change units of altitude, the outcome of calculation will be automatically changed and displayed in the new units.
- To discontinue this operation, press the MODE key to switch to the POS mode.

2

Basic Operation

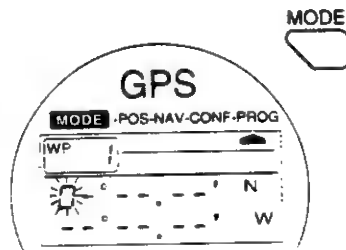
# Changing Units of Distance and Speed

You can select "km" (Kilometer), "NM" (Nautical Mile) or "M" (Mile) as the units of distance and speed.

2

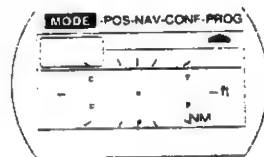
Basic Operation

1



Press the MODE key until the PROG mod is set.

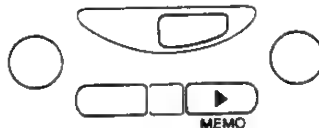
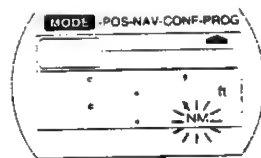
2



Press the DISPLAY key until the display a the left appears.

- The latitude and longitude unit figures which are currently selected will flash.

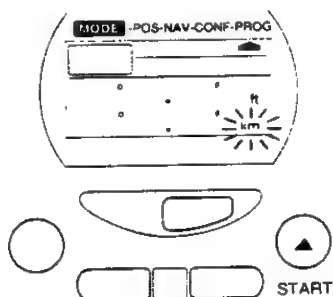
3



Press the MEMO (▶) key twice.

- The distance and speed unit figures which are currently selected will flash.

4

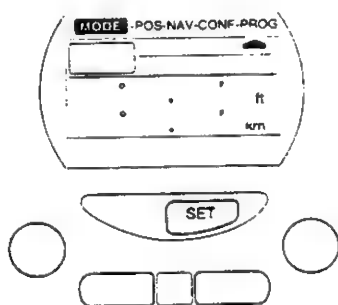


Press the START (▲) key to toggle the units for distance and speed.

- Each press makes the units toggle as follows.

→ km → NM → M →

5



Press the SET key.

- Entry completion beep will sound. Flashing will stop.

**Note**

- When you change units, a distance to the destination or speed will be automatically changed and displayed in the new units.
- To discontinue this operation, press the MODE key to switch to the POS mode.

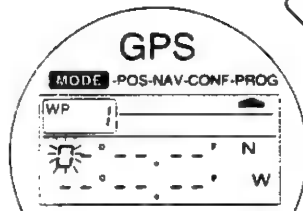
# Collecting an Almanac

The time needed for calculation of a current position will be reduced to about 1-3 minutes from 10 minutes after Almanac information is stored. The data of Almanac is automatically renewed by the latest data every time calculation is made. GPS receivers store satellite locations and information about the GPS constellation. This data is updated periodically by the satellites. Occasionally, you should collect an updated almanac using the following method.

2

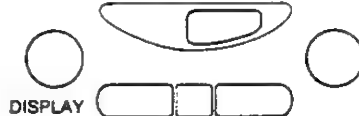
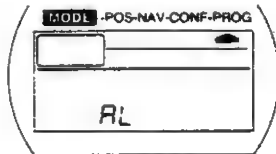
Basic Operation

1



Press the MODE key until the PROG mode is set.

2

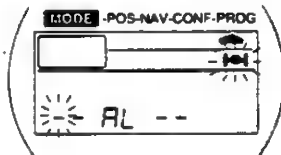


Press the DISPLAY key until the display at the left appears.

- "RL" (AL) will be displayed.

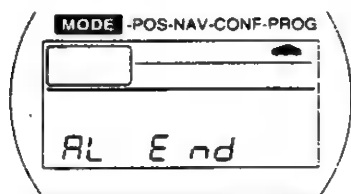
The unit must be outside and in the clear as described earlier.

3



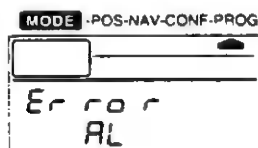
Press the START (▲) key.

- Almanac Receiving will be started.  
The satellite indicator will flash.
- The flashing "--" will move to the right side of the display, as this unit receives Almanac data.



- Almanac Receiving will be completed in about 15 minutes. Completion beep will sound.

- Important**
- When Almanac receiving is not completed after 20 minutes or when an error message is displayed, try to receive an Almanac at a different location and time.



- Note**
- When using this unit repeatedly, Almanac of GPS satellites will be automatically renewed with the latest data.
  - When not using this unit for more than 6 months, please collect an updated Almanac.



# **The Four Function Modes**

---

## **Position (POS) Mode**

1. Date and Time
2. Calculating Current Position
3. Altitude
4. Waypoints and Latitude/Longitude
5. Entering Current Position into a Waypoint
6. Bearing and Range

**3**

## **Navigation (NAV) Mode**

1. Bearing and Range to a Waypoint
2. Heading and Speed
3. Cross Track Error
4. Estimated Time of Arrival/Enroute
5. Using Waypoint Zero (WP 0)

Position

## **Confirmation (CONF) Mode**

1. Confirming an Entered Waypoint's Latitude/Longitude
2. Confirming Waypoint Numbers Entered in a Route
3. Displaying Bearing and Range between Any Two Waypoints

## **Programming (PROG) Mode**

1. Entering Latitude/Longitude of a Waypoint
2. Changing Entered Latitude/Longitude
3. Clearing Entered Latitude/Longitude
4. Route Planning
5. Creating a Route
6. Selecting a Route
7. Clearing a Route

## **Position (POS) Mode**

- 1. Date and Time**
- 2. Calculating Current Position**
- 3. Altitude**
- 4. Waypoints and Latitude/Longitude**
- 5. Entering Current Position into a Waypoint**
- 6. Bearing and Range**

**3**

Position

# Displaying Date and Time

The internal clock in this unit will be updated to present UTC after calculation of a position by receiving signals from the GPS satellites which provide UTC time and date information.

**1**

**3**

**2**

Position

MODE

Press the MODE key until the POS mode is set.

GPS

MODE - POS-NAV-CONF-PROG

MODE - POS-NAV-CONF-PROG

92 03 11

16:45:30

DISPLAY

Press the DISPLAY key until the present date and time appears.

## Important

### ● Date/Time Display

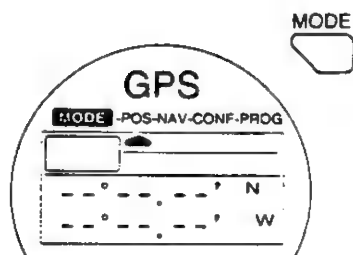
An accurate time will be automatically displayed when the first calculation is done after purchase.

- "L" ..... Local Time
- "U" .... UTC

# Calculating Current Position

Your present latitude, longitude and altitude can be calculated.

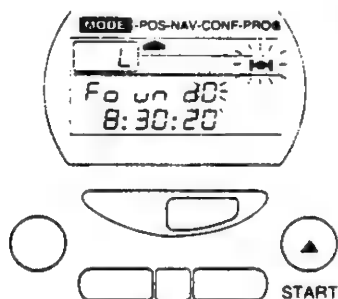
1



Press the MODE key until the POS mode is set.

- "▲" mark will be displayed under the character POS.
- When the letters (N or S, W or E) are not displayed in the right side of the screen, press the DISPLAY key until the letters appear.

2

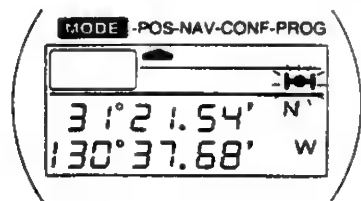
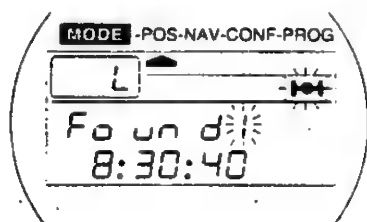


Press the START key.

- The GPS receiver starts to acquire signals from satellites. "HD" and "0" will flash and "Found" will be lit. The number next to "Found" indicates the number of received satellites.
- The current time will be displayed. "L" will be displayed when using local time, "U" will be displayed when using UTC in the upper left side of the display.
- "1" will flash when the signals from the first satellite are received. Every time the signals from a new satellite are received, the number of satellites will be increased by 1 and flash.

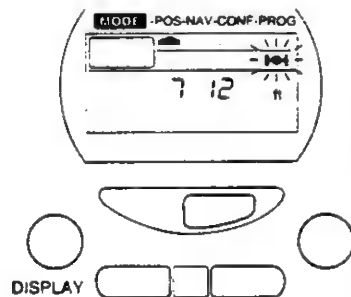
3

Position



- When enough satellites (usually 4) for a position fix are received, the present latitude and longitude will be displayed.
  - The calculation completion beep will sound twice.
- N···North Latitude    S···South Latitude  
W···West Longitude    E···East Longitude

## Determining Altitude



While the present latitude and longitude are displayed (page 45), press the DISPLAY key.

- The present altitude will be displayed.  
ft ..... feet
- While the present altitude is displayed:  
Pressing the DISPLAY key twice returns you to date and time.  
Pressing the DISPLAY key 3 times returns you to latitude and longitude.

3

Position

### Important

- Displaying outcome of calculation

You can only display altitude after acquisition of 4 satellites. However, it is possible to determine a latitude/longitude fix from only 3.

- Displaying the present time

The GPS receiver's internal clock is automatically synchronized with the atomic clock aboard the satellite upon acquisition of the first position fix. It is re-synchronized upon subsequent fixes.

### Note

- Calculating time

This unit is programmed to finish calculation in about 10 minutes before collecting an Almanac. Whenever a measurement is done, this unit stores Almanac information from GPS satellites by degrees. When the whole data is assembled, the calculating time will be reduced 1 to 3 minutes. However, it may take longer depending on the satellites' constellation or other circumstances. We recommend you to collect an Almanac to shorten calculating time when the unit is not used frequently. (page 40)

# Waypoints and Latitude/Longitude

This unit has the ability to store up to 99 Waypoints (destination or intermediate points on a route).

Each Waypoint is assigned its own number (from 1-99) for easy recall.

A destination Waypoint must be entered to calculate the navigation functions described in this section.

## Entering

Enter the calculated latitude and longitude in PROG mode. (page 48)

Enter the destination latitude/longitude coordinates from a map or a chart. (page 70)

3



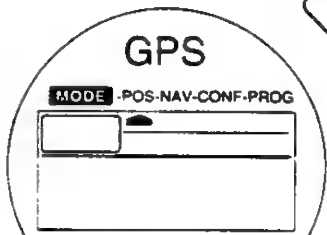
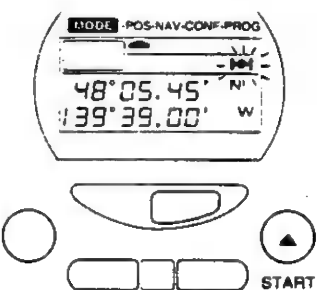
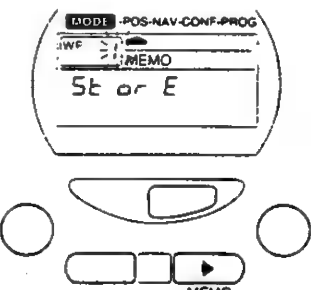
You can save the coordinates of your fishing spot.



Position

# Entering Current Position into a Waypoint

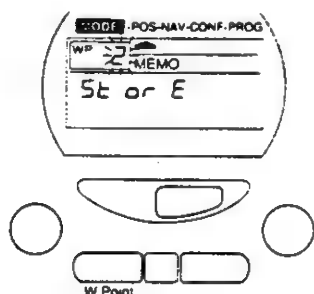
Once you enter the calculated latitude/longitude, you can check the position on a chart. The calculated latitude/longitude is saved in WP number (1-99).

- 1**  **MODE** Press the MODE key until the POS mode is set.
- 2**  Press the START key to calculate your current position (latitude/longitude).  
 ● After calculation, completion beep will sound twice and your current latitude and longitude will be displayed.
- 3**  Press the MEMO key while latitude and longitude are displayed.  
 ● "Store" and "MEMO" will be lit and WP number will flash.

## Important

- You can only store the calculated latitude/longitude when you press the MEMO key while latitude and longitude are displayed.
- You may only store latitude/longitude, altitude will not be stored.

4



Press the W.Point key to select the WP number where latitude and longitude coordinates are to be stored.

- By pressing the W.Point key, the number will advance as follows.

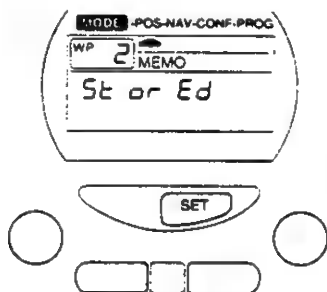
1 → 2 → 3 → . . . . → 98 → 99

- Holding down this key makes WP number advance automatically.

3

Position

5



Press the SET key.

- Entry completion beep will sound once, and WP number will be entered.
- About 2 seconds later, the latitude and longitude entered will be displayed.

### Important

- When "FULL" is displayed, the all WP numbers have been used. Clear an unnecessary WP number and enter again. (page 74)

### Note

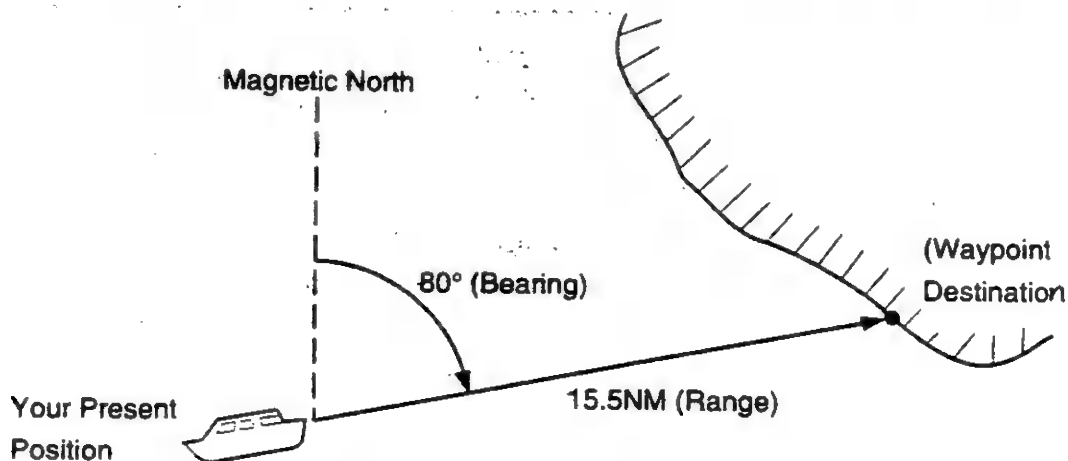
- Displaying WP number  
By pressing the MEMO and then the W. Point key, the empty WP numbers will be displayed.



# Bearing and Range to a Destination

3

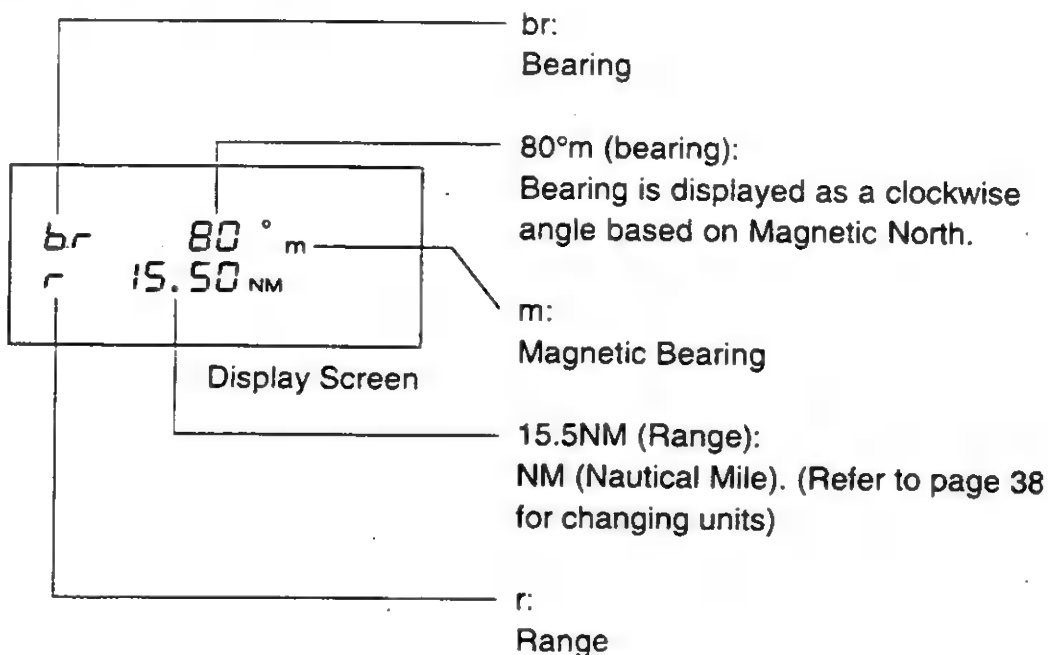
Position



Once a Waypoint has been entered as a destination, all the navigation functions are available and can be accessed.

Bearing and Range to a destination is shown below as an example.

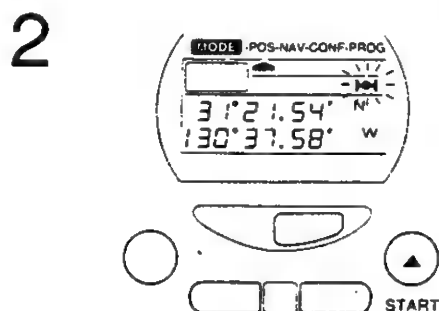
## Bearing/Range to Destination



# Displaying Bearing and Range to a Destination

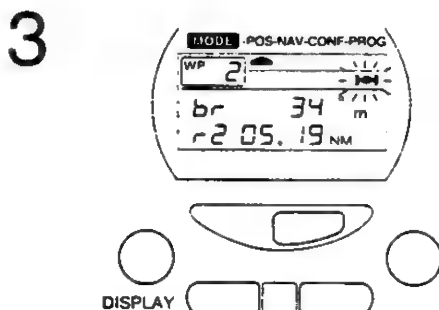
The bearing and range from your present position to your destination (the position you saved in WP number) will be displayed. You can advance to your destination while confirming the bearing.

**1** Press the MODE key until the POS mode is set.



Press the START key to calculate your present position.

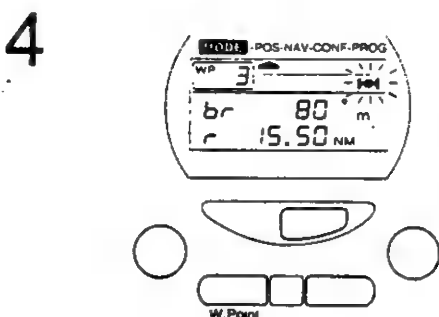
- When calculation is completed, the calculation completion beep will sound twice. The latitude and longitude of your current position will be displayed.



Press the DISPLAY key twice.

- The entered WP number and the bearing and range to that point will be displayed.

"br".....Bearing  
"r".....Range  
"m".....Magnetic Bearing



Press the W. Point key to select the desired WP number.

- Each press makes WP number change. The bearing and range to each point will be displayed.

**3**

Position

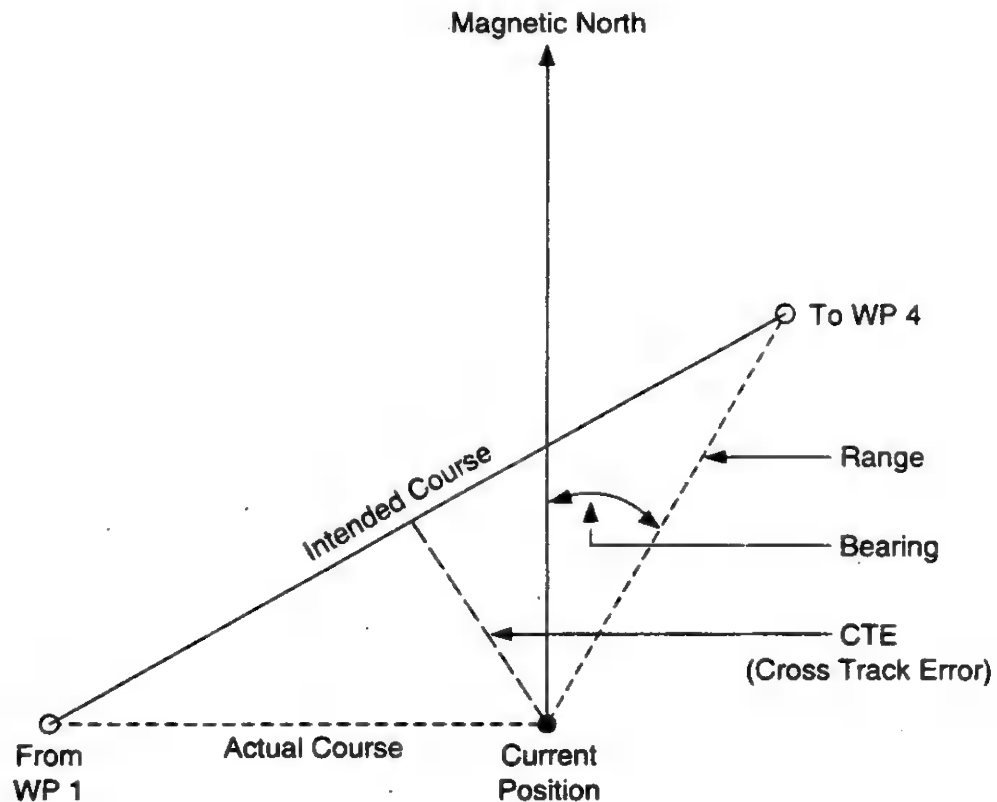
## Navigation (NAV) Mode

You can navigate by selecting one route from entered routes. See page 80.

1. Bearing and Range to a Waypoint
2. Heading and Speed
3. Cross Track Error
4. Estimated Time of Arrival/Enroute
5. Using Waypoint Zero (WP 0)

4

Navigation

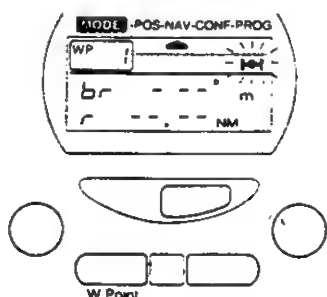


# Displaying Bearing and Range to a Waypoint

The bearing and range to a Waypoint from your present position can be confirmed.

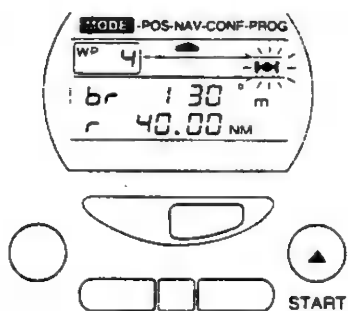
1 Press the MODE key until the NAV mode is set.

2



Press the W.Point key to select the WP number assigned to the desired destination.

3



Press the START key when the satellite indicator is not flashing.

- The bearing and range to the position of the WP number you selected will be displayed.

## Note

- The WP number first appears on the display is the WP number which was displayed on the last display screen.
- If you press the W.Point key while the WP number assigned to the last point is displayed, the WP number assigned to the first Waypoint will be displayed.
- In the NAV mode, only by pressing the DISPLAY key, "COG and SOG", "Cross Track Error", "ETA" and "ETE" will be displayed by turns.

4

Navigation

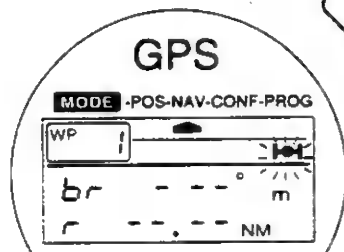
# Displaying Heading/Speed

Heading (COG)/Speed (SOG) will be displayed only when using this unit in Continuous Calculation.

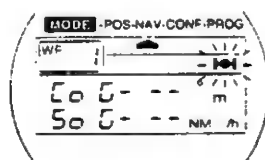
1



Press the MODE key until the NAV mode is set.



2



Press the DISPLAY key.

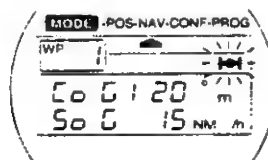
- COG and SOG will be displayed.  
COG (Course Over Ground) ... Heading  
SOG (Speed Over Ground).... Speed

4

Navigation



3



Press the START key when the satellite indicator is not flashing.

- The current COG and SOG will be displayed.



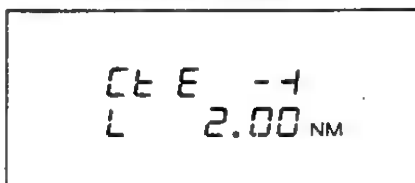
## Note

- In the case of changing unit of distance (page 38), the unit of SOG will be automatically changed and displayed.
- As the SOG is increased, the more accurate figure of COG and SOG will be displayed. Because of the continuous calculation, a figure of SOG might not be 0 even when you are stationary.

# Displaying Cross Track Error

The error from the current position to the route which connects two Waypoints will be displayed.

Display Screen



CT E (CTE) ..... Cross Track Error

R (Right) ..... Your current position has deviated to RIGHT from the intended course.

- - ..... "- -" indicates that you have to change the direction to the left.

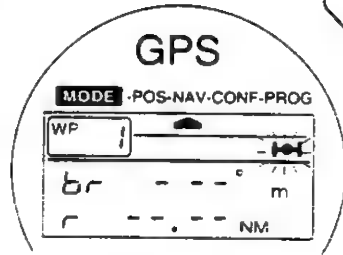
L (Left) ..... Your current position has deviated to LEFT from the intended course.

- + ..... "- +" indicates that you have to change the direction to the right.

## Displaying Cross Track Error (cont.)

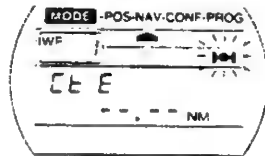
Navigation

1



Press the MODE key until the NAV mode is set.

2



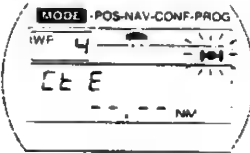
Press the DISPLAY key twice.

● CTE (CTE) ..... Cross Track Error

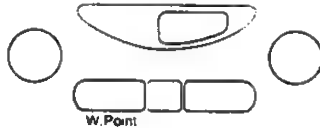
4



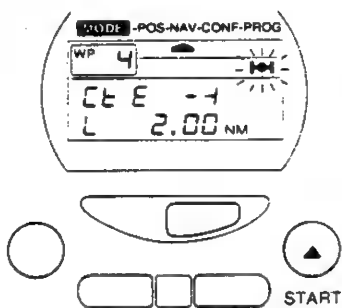
3



Press the W.Point key to select the desired WP number.



4



Press the START key when the satellite indicator is not flashing.

- The deviation from the intended course will be displayed.
- $\leftarrow$  (r) ..... Change the direction to the left.
- $\rightarrow$  (L) ..... Change the direction to the right.
- Up to 99.99 (km, M, NM) will be displayed.

**Important**

- Cross Track Error will not be displayed when moving to the first Waypoint in a route.

4

Navigation

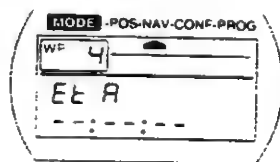


# Displaying Estimated Time of Arrival/Enroute

You can confirm estimated time of arrival/enroute to the next Waypoint, when you are moving to your destination at the present speed. ETA and ETE are displayed only when using this unit in Continuous Calculation.

1 Press the MODE key until the NAV mode is set.

2



Press the DISPLAY key 3 times.

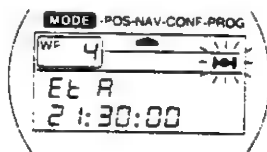
- "Et A" will be displayed.
- "Et A" (ETA) ... Estimated Time of Arrival

4

3

Press the W.Point key to select the desired WP number, if necessary.

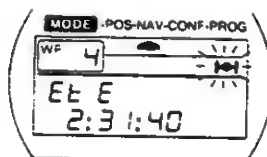
4



Press the START key when the satellite indicator is not flashing.

- ETA to the desired Waypoint will be displayed.

5



Press the DISPLAY key while ETA is displayed.

- ETE will be displayed.
- Et E (ETE) ..... Estimated Time Enroute

### Note

#### ●ETA Display

The figures from the present time to 23 hours 59 minutes later will be displayed as ETA. "-- : -- : --" will be displayed in the case of over 24 hours, and in the following three cases.

1. Calculation of a current position is impossible.
2. Single Calculation is programmed.
3. Moving backward along your route.

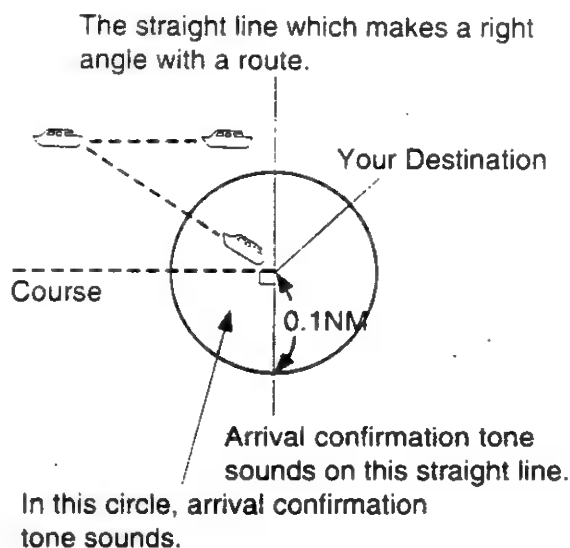
#### ●ETE Display

The figures up to 99 hours 59 minutes and 59 seconds will be displayed as ETE. "99:59:59" will be displayed in the case of over 100 hours. "-- : -- : --" will be displayed in the above three cases.

#### ●Arrival Confirmation Tone

When you come within a radius of 0.1NM of your destination, the arrival confirmation tone will sound 8 times.

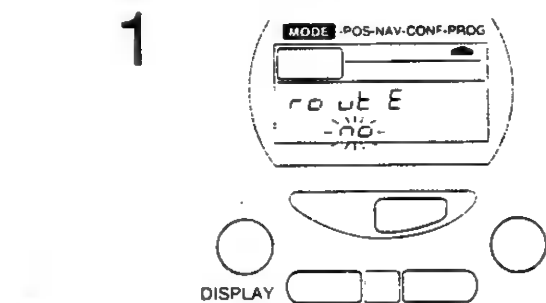
Also when you pass the straight line which makes a right angle with the route, an arrival confirmation tone will sound.



After an arrival confirmation tone sounds, this unit is automatically set for the next Waypoint without setting the WP number of the next intended point.

# Using Waypoint Zero (From-To)

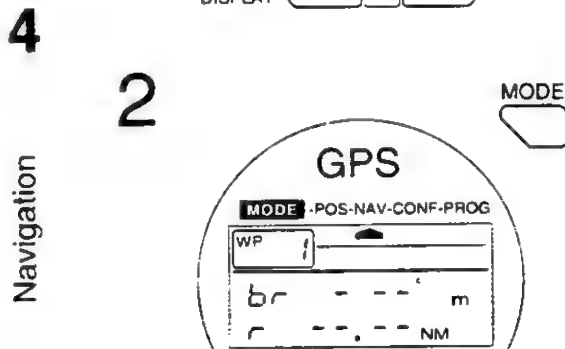
Waypoint Zero is your Present Position. Calculation of Bearing and Range to a known Waypoint is possible. Also, Waypoint Zero has a special use as a starting point when you have drifted off course and wish to re-plot a course to your destination without returning to your original course. Waypoint Zero resets Cross Track Error to zero at the new starting point the moment it is entered.



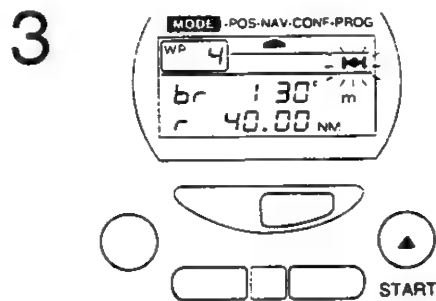
Set "r o" route by referring "Selecting a Route" (page 80).

or

If you have drifted off course and wish to re-plot a course, skip Step 1.

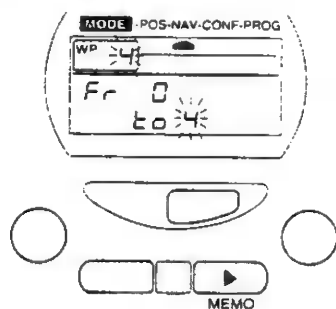


Press the MODE key until the NAV mode is set.



Press the START (▲) key to calculate your current position.

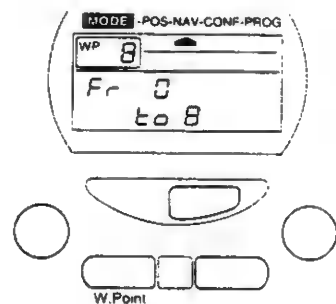
4



Press the MEMO (▶) key.

- "Fr 0" (From 0: Present position) and "to 4" (To WP 4: number of the destination) will flash.

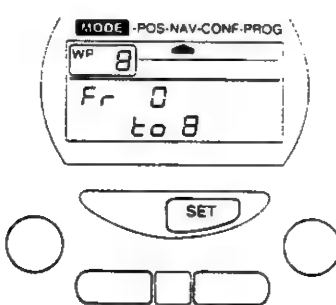
5



Press the W.Point key to select the desired WP number of the destination.

- If you have set a route number (except route "no"), you have to select an entered WP number of the route.
- If you have set "route no," you can select any WP number.

6



Press the SET key.

- Entry completion beep will sound, and a new route from the present position (WP 0) to the destination (Ex. WP 8) will be set.
- About 2 seconds later, the bearing and range to the destination will be displayed.

4

Navigation

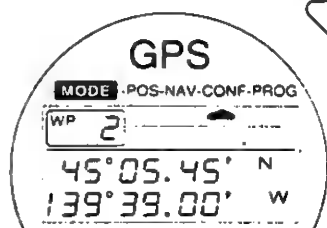
## **Confirmation (CONF) Mode**

- 1. Confirming an Entered Waypoint's Latitude/Longitude**
- 2. Confirming Waypoint Numbers Entered in a Route**
- 3. Displaying Bearing and Range between Any Two Waypoints**

# Confirming an Entered Waypoint's Latitude/Longitude

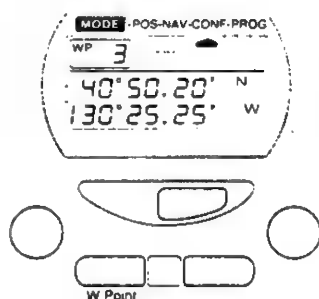
You can confirm the latitude and longitude entered into each Waypoint.

1



Press the MODE key until the CONF mode is set.

2



Press the W.Point key to select the WP number you wish to confirm.

- The latitude and longitude of the WP number you have selected will be displayed.
- Only the WP numbers in which a latitude and longitude are stored will be displayed.

## Important

- In the CONF mode, it is not possible to change latitude and longitude. If you want to change, refer to page 72 "Changing Entered Latitude/Longitude".

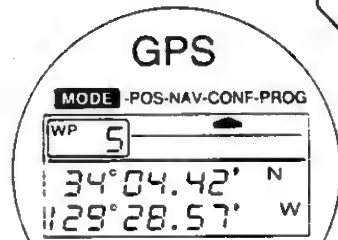
5

Confirmation

# Confirming Waypoint Numbers Entered in a Route

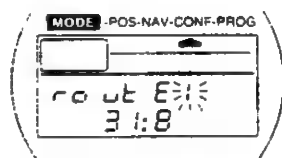
You can confirm which WP numbers were entered in which route.

1



Press the MODE key until the CONF mode is set.

2



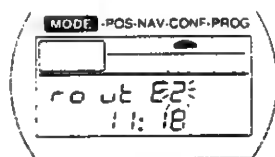
Press the DISPLAY key.

- "route E" (Route) will be displayed, and route number "1" will flash.

5

Confirmation

3

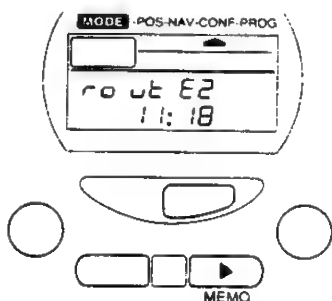


Press the START (▲) key to select the desired route number.

- Each press advances the route number as follows.

→ 1 → 2 → 3 → ..... → 9 →

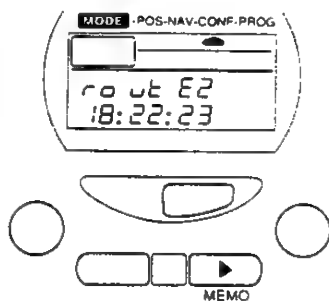
4



Press the MEMO ( ► ) key.

- Flashing of the selected route number will stop.

5

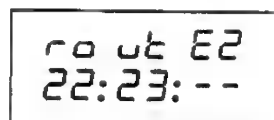


Press the MEMO ( ► ) key.

- Each press makes the entered WP number advance in the entered order.

**Note**

- To confirm the latitude and longitude of the entered Waypoint, refer to "Confirming an Entered Waypoint's Latitude/Longitude" on page 63.
- When the right WP number field is blank, the last WP number of the entered WP numbers is displayed.



blank or "--"  
the last WP number

5

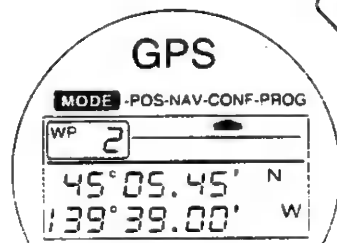
Confirmation



# Displaying Bearing/Range between Any Two Waypoints

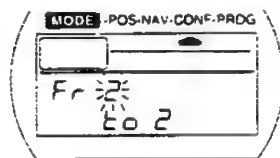
The bearing and range between any two Waypoints of which latitude and longitude are stored in memory can be calculated. This information is useful for trip planning.

1



Press the MODE key until the CONF mode is set.

2

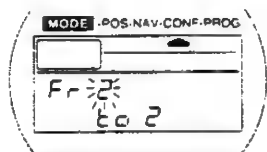


Press the DISPLAY key twice.

5



3

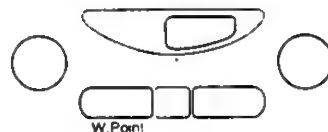


Press the W.Point key to select the desired WP number.

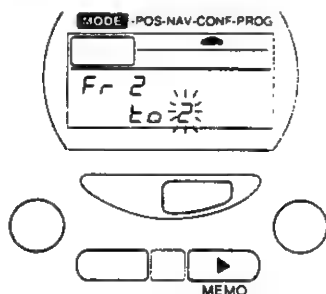
- Each press makes the number advance as follows.

→ 1 → 2 → 3 → ..... → 99 →

Confirmation



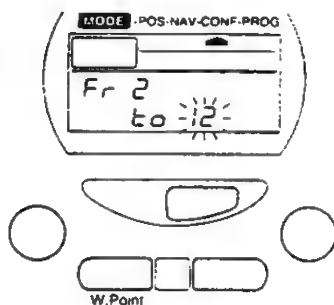
4



Press the MEMO ( ► ) key.

- You will change from the Waypoint to the "to" Waypoint.

5



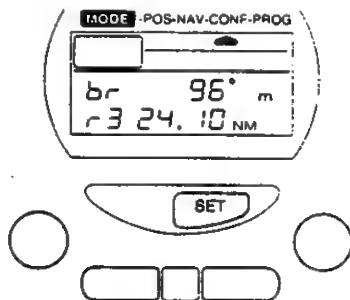
Press the W.Point key to select the desired WP number.

- Each press makes the number advance as follows.

→ 1 → 2 → 3 → ..... → 99

5

6



Press the SET key.

- The bearing and range between the two selected Waypoints will be displayed.
- About 2 seconds later, the display screen will return to Step 3.
- Each press of the SET key makes the bearing and range display for about 2 seconds.

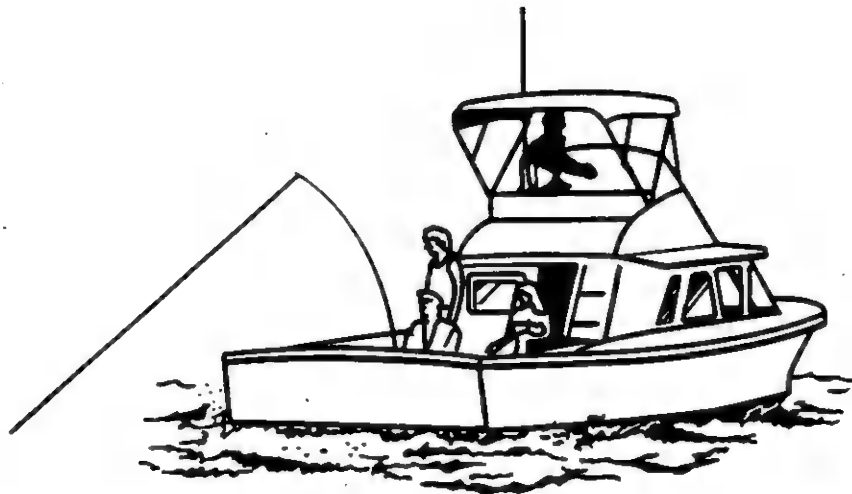
Confirmation

**Note**

- Only Waypoints with latitude/longitude stored in them will be able to be selected.

6

Program



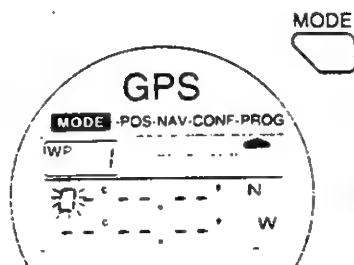
## **Programming (PROG) Mode**

- 1. Entering Latitude/Longitude of a Waypoint**
- 2. Changing Entered Latitude/Longitude**
- 3. Clearing Entered Latitude/Longitude**
- 4. Route Planning**
- 5. Creating a Route**
- 6. Selecting a Route**
- 7. Clearing a Route**

# Entering Latitude/Longitude of a Waypoint

After pinpointing the latitude and longitude of a Waypoint on a chart, you can enter it into a WP number (1-99).

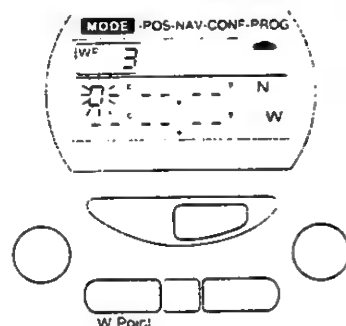
1



Press the MODE key until the PROG mode is set.

- N .... North Latitude  
W .... West Longitude
- The PROG mode indicator will be displayed and the first digit of latitude degrees will flash.

2

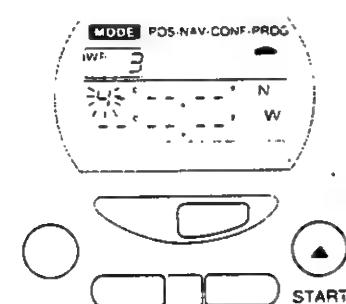


Press the W.Point key until the desired WF number appears.

- By pressing the key, the WP number will be advanced as follows.

1 → 2 → 3 → ..... → 98 → 99

3



Press the START key (▲) to select the number for the first digit of the latitude degrees.

- By pressing this key, the number will be advanced as follows.

0 → 1 → 2 → ..... → 9 → - - -

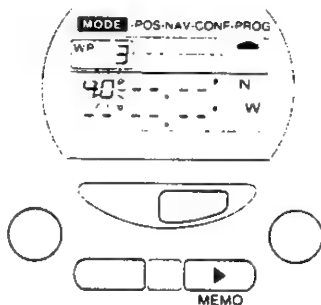
6

Program

## Note

- Entered latitude and longitude  
to Confirm ..... Refer to Page 63  
to Change ..... Refer to Page 72  
to Clear ..... Refer to Page 74

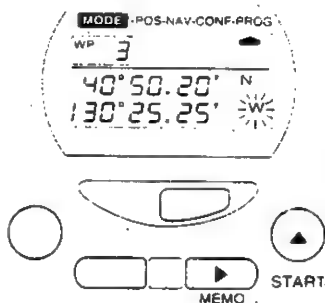
4



Press the MEMO key (▶) to select the second digit.

- The flashing number will be displayed, flashing will move to the next slot.

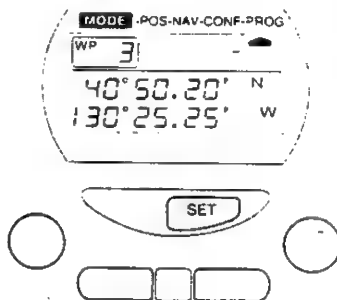
5



Repeat the same operation as on Step 3 and 4 to enter the degrees, minutes and seconds or hundredths of the latitude and longitude.

- "W" will flash.
- "N" or "S", "E" or "W" may be selected by pressing the START (▲) key.

6



Press the SET key.

- Entry completion beep will sound. Flashing will stop.

#### Note

- Entering latitude and longitude  
"N" or "S" will flash and be toggled by pressing the START (▲) key while "N" or "S" is flashing. Also "W" or "E" will flash in turn and can be selected.

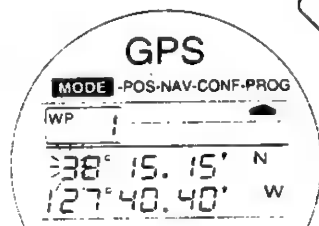
6

Program

# Changing Entered Latitude/Longitude

You can change the latitude and longitude of a Waypoint you have entered in memory. The PROG mode is used for this purpose.

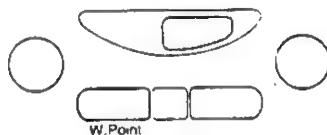
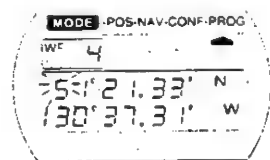
1



Press the MODE key until the PROG mod is set.

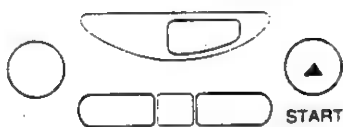
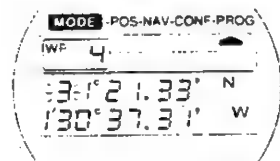
- The PROG mode indication will be displayed.
- The first digit of the latitude degrees will flash.

2



Press the W.Point key to select the WP number that you wish to change.

3



Press the START (▲) key to select the number.

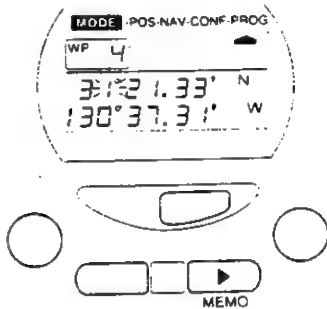
- Each press makes the number advance as follows.



6

Program

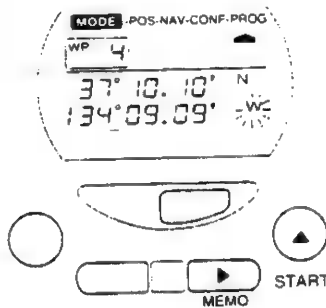
4



Press the MEMO (▶) key to select the next digit position.

- The flashing number will be displayed and the flashing will move to the next digit position.

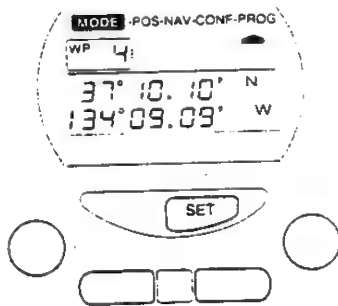
5



Repeat the same operation as on Step 3 and 4 to change the numbers of the degrees, minutes and seconds or hundredths of latitude and longitude.

- Change N to South or W to East as needed.

6



Press the SET key.

- Entry completion beep will sound. Flashing will stop.

6

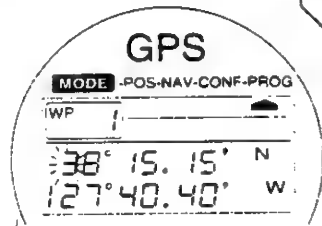
Program



# Clearing Entered Latitude/Longitude

You can clear the entry of latitude and longitude in a Waypoint as follows.

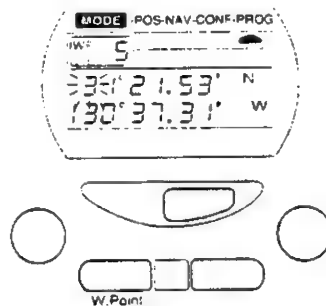
1



Press the MODE key until the PROG mode is set.

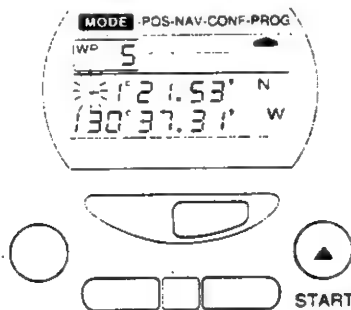
- The PROG mode indicator will be lit. The number in the first digit position of the latitude degrees will flash.

2



Press the W.Point key to select the WP number which you want to clear.

3



Press the START (▲) key to select "—" in the first digit position of the latitude degree

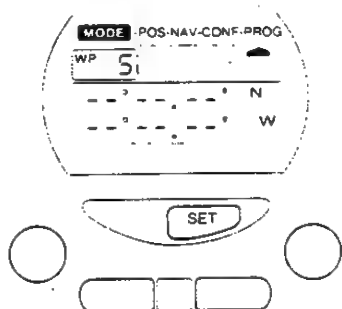
- Each press makes the number advance as follows.



6

Program

4



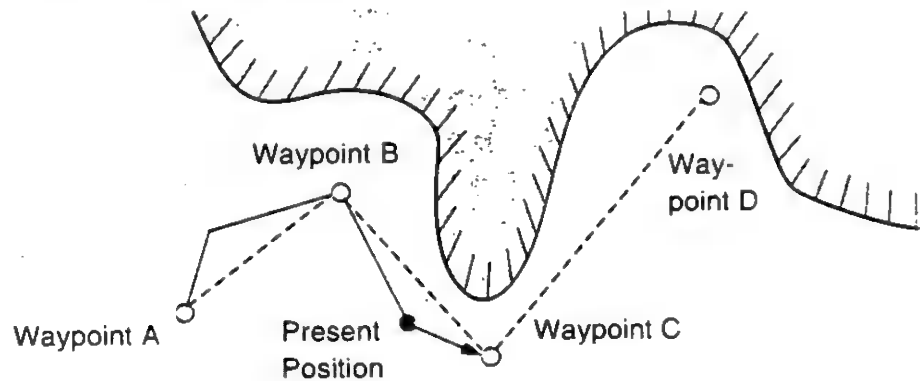
Press the SET key.

- Clearing completion beep will sound.

6

Program

# Route Planning



After planning a route by entering the data (latitude/longitude) of the points you want to pass through and the final destination, you can advance to your destination by calculating your present position and revising the cross track error.

## Creating a Route

On a chart, a route can be created by entering the Waypoints you want to pass through in the desired sequence. This sequence of Waypoints enables you to create a route, numbered from 1 to 9. One route consists of several Waypoints, which are stored in memory.

### 1. A Complex Route

You can create up to nine routes. Up to ten Waypoints may be assigned to each route.

(Example) WP number Assignment

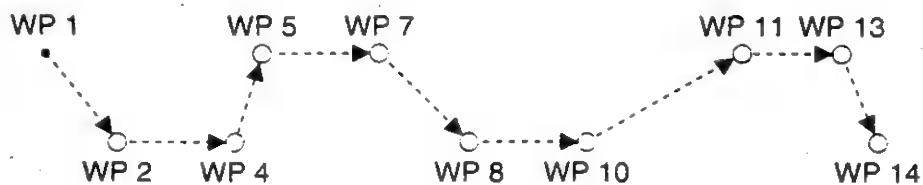
Route Number ..... Assigned Waypoint Number

route 1	.....	1	2	4	5	7	8	10	11	13	14
route 2	.....	1	4	3	7	8	4				
route 9	.....	25	40	32	99						

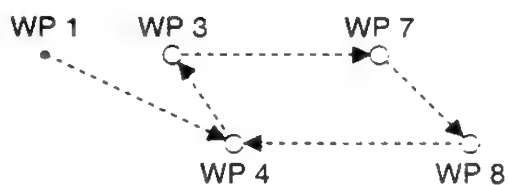
6

Program

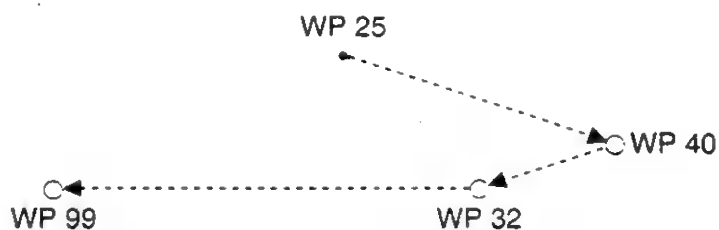
route 1



route 2



route 9



- \* When you create a route, the reverse route is automatically created.

You can navigate the reverse route by selecting a reverse route (Ex. route 1A).

Route Number

Assigned WP Numbers

route 1 ..... 

1	2	4	5	7	8	10	11	13	14
---	---	---	---	---	---	----	----	----	----

route 1A ..... 

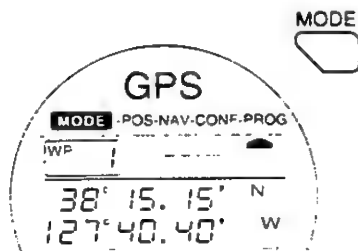
14	13	11	10	8	7	5	4	2	1
----	----	----	----	---	---	---	---	---	---

(reverse route of route 1)

# Creating a Route

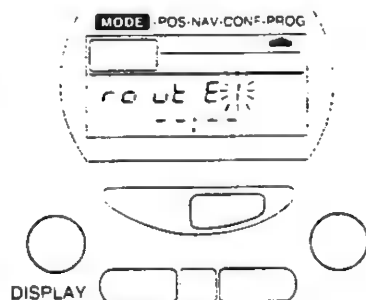
A route can be created by selecting a starting point and a final destination from Waypoints which have the assigned WP number. You can use a route which connects a starting point and a final destination. You can create up to nine routes. Up to ten Waypoints are assigned to each route.

1



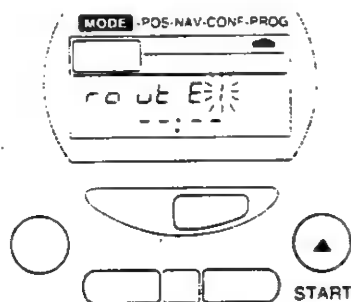
Press the MODE key until the PROG mode is set.

2



Press the DISPLAY key twice.  
● "route E 1" will be displayed.  
The number of the route will flash.

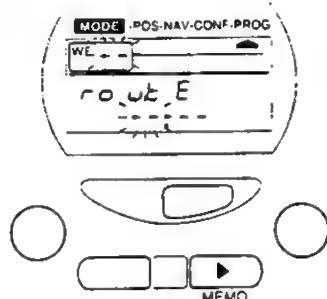
3



Press the START (▲) key to select a route number to enter.  
● Each press makes the route number advance as follows.

→ 1 → 2 → 3 → ..... → 9

4

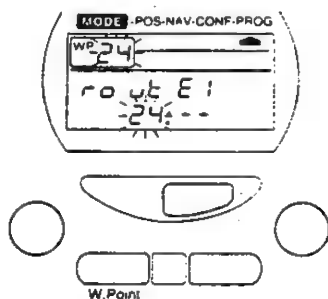


Press the MEMO (▶) key.  
● Flashing of the selected route will stop, and the WP number field will flash.

6

Program

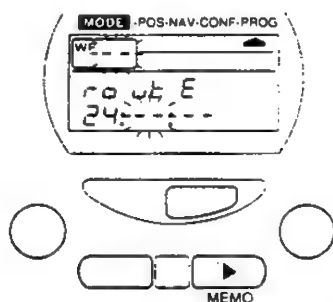
5



Press the W.Point key to select the desired WP number.

- You can enter up to ten WP numbers into one route.

6



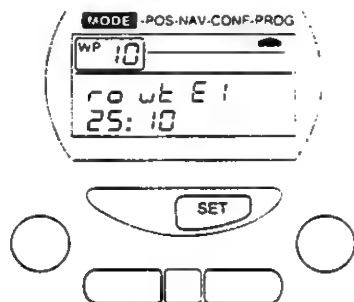
Press the MEMO (▶) key.

- The entered WP number will be moved to left, and the WP number field will flash.
- When ten WP numbers are entered, the right WP number field will be blank.

7

Repeat the same operation as on Step 5 and 6 to assign Waypoints.

8



Press the SET key.

- Entry completion beep will sound. Flashing of the last assigned WP number will stop.

#### Note

- Entering the same WP number.  
The same WP number can be entered several times in the same route, when you pass through the same point several times.
- To change the WP number assigned in a route, press the START key after pressing the SET key on Step 8, then the route number will flash. You will go back to Step 3 again to assign the desired WP number, and follow the instruction.

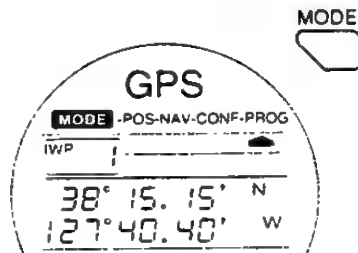
6

Program

# Selecting a Route

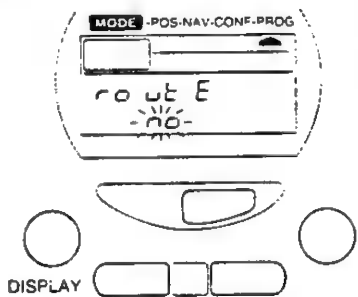
You can select one route from assigned routes to navigate.  
When you create a route, the reverse route is automatically set.  
The display of "route E" means the reverse route of route 1.

1



Press the MODE key until the PROG mode is set.

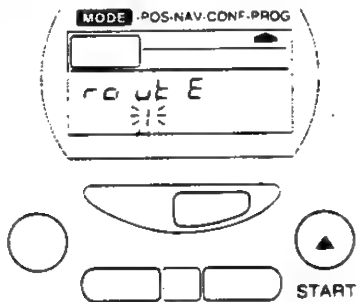
2



Press the DISPLAY key.

- "route E" (Route) will be displayed, and "no" will flash.

3



Press the START (▲) key to select the route number to be used.

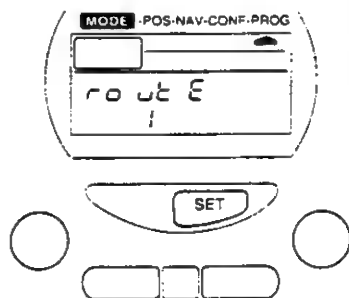
- Each press changes the route number as follows.

→ no → 1 → 1A → 2 → .....9 → 9A →

6

Program

4



Press the SET key.

- Entry completion beep will sound. Flashing of the selected route number will stop.

**Note**

- Empty route number is not displayed when you press the START (▲) key on Step 3.
- The following entered routes can be selected.
  - route no (See page 60)
  - route 1~9
  - route 1A~9A (reverse routes)

6

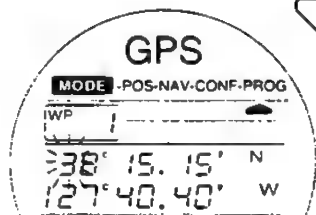
Program



# Clearing a Route

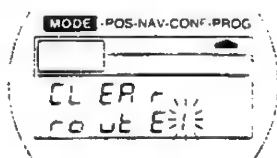
The entered Waypoint assignment in one route can be cleared. To clear Waypoint in another route, select a new route.

1



Press the MODE key until the PROG mode is set.

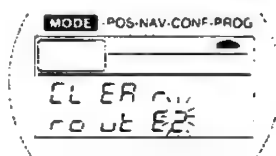
2



Press the DISPLAY key 3 times.

- "route E1" will be displayed, and the route number will flash.

3



Press the START (▲) key to select the route number to be cleared.

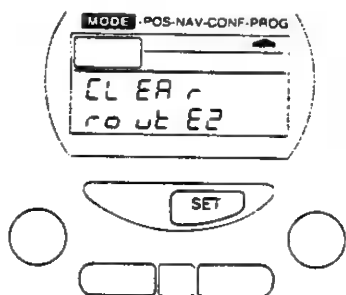
- Each press makes the route number advance as follows.

→ 1 → 2 → 3 → ..... → 9

6

Program

4



Press the SET key.

- Clearing completion beep will sound.  
Flashing will stop.

**Note**

- Latitude and longitude of Waypoints will not be cleared on this occasion.  
Only the WP number entry of a route can be cleared by this operation.
- The all WP numbers in the selected route will be cleared by a single operation.

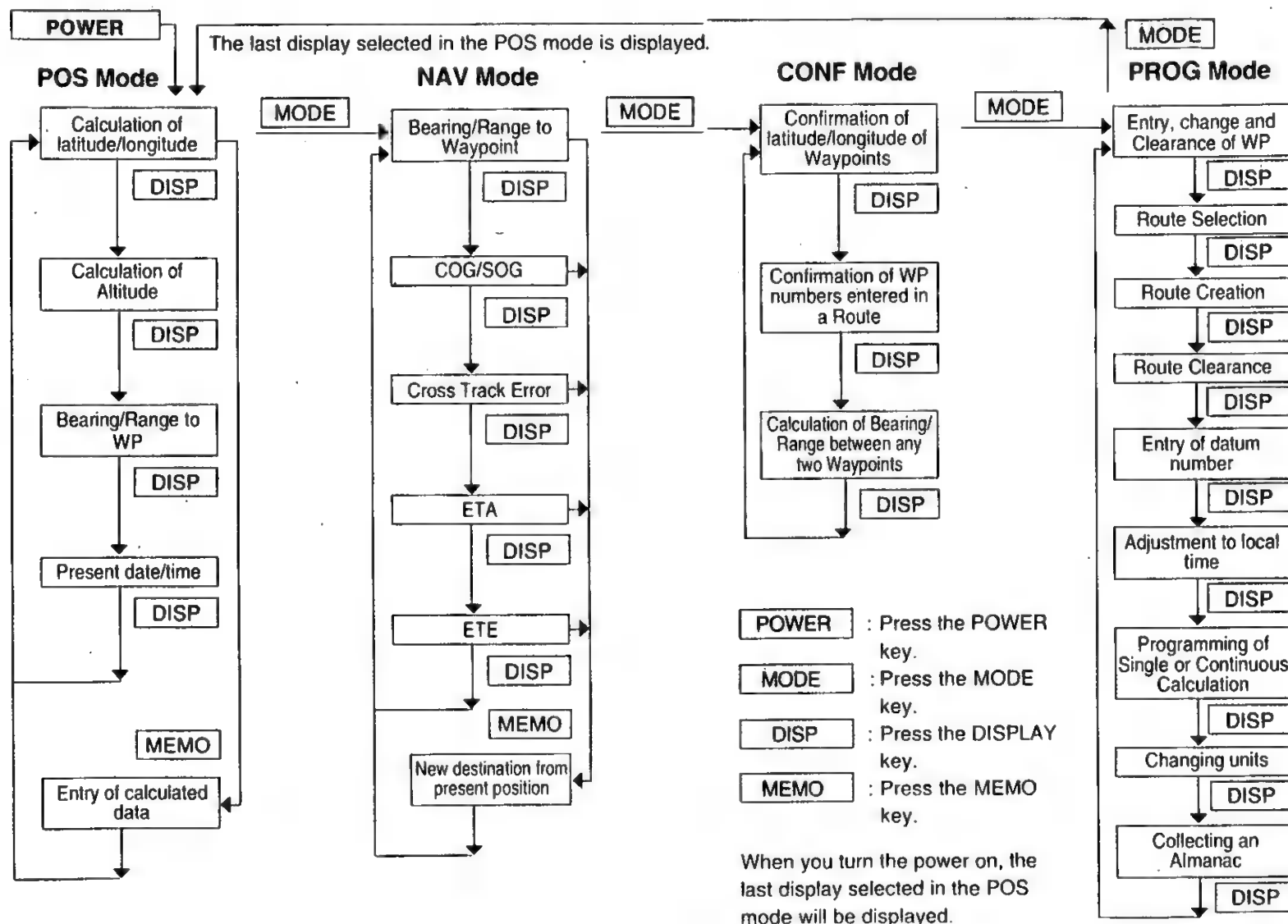
6

Program

# Overall Function Chart

The POS mode is set after turning the power on. The other modes (NAV, CONF, PROG) is switched to by pressing the MODE key.

The display screen is switched to by pressing the DISPLAY key in each mode.



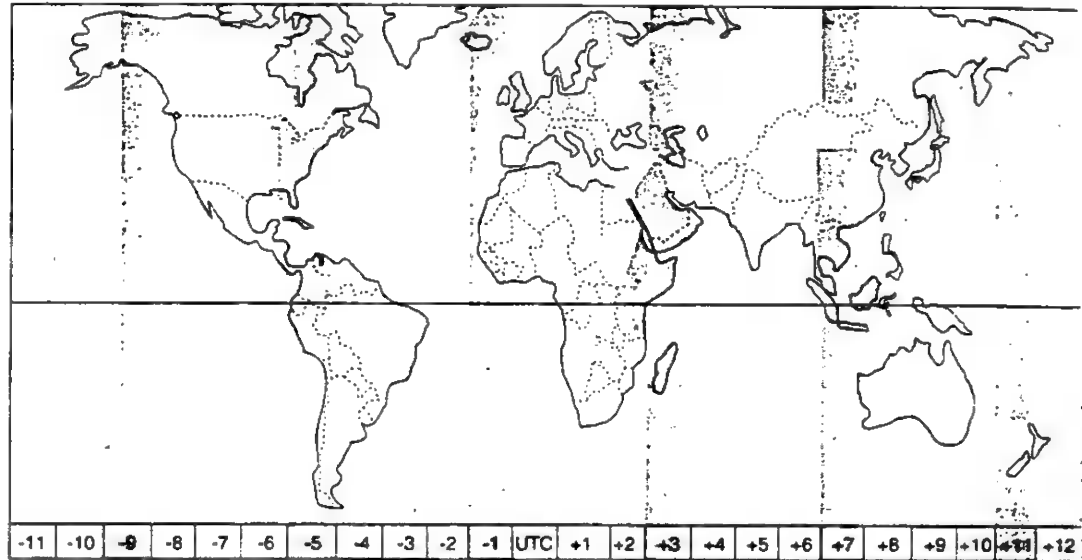
# Display Characters

Display Type	Meaning	Reference page
AL	Almanac: Information about location of satellites	40
br	Bearing	50
CL EA r ro ut E	Route Clear: Clearing a route	82
Co G	COG (Course Over Ground): Direction you are moving in relation to the ground.	54
Con t	Continuous: Continuous Calculation	32
Ct E	CTE (Cross Track Error): Deviation from intended course	55
d no.	Datum Number	28
Er ror AL	Error Almanac: Error in receiving Almanac	41
Et A	ETA (Estimated Time of Arrival)	58
Et E	ETE (Estimated Time Enroute)	58
Fo un d	Found: Satellites are being received	45
Fr 0 to	From 0 to: Entry from WP 0 to WP #	61
ft	Feet	36
F ull L	Full: WP numbers (01-99) are all used. No empty WP available	49
km	Kilometer	39
km/h	Kilometers per Hour	54
L	Local Time	45

Display Type	Meaning	Reference page
L - -	Left: Your position is off course to LEFT of the intended course. Steer right to get back on course	55
M	Mile	39
M/h	Miles per Hour	54
m	Meter	36
	Magnetic Bearing	51
MEMO	Memo: Completion of entering calculated data	48
NM	Nautical Mile	39
NM/h	Nautical Miles per Hour (Knots)	54
Once E	Once: Single Calculation	32
r	r (Range): Distance to selected WP	51
r - -	Right: Your position is off to RIGHT of the intended course. Steer left to get back on course	55
route E no	Entry of route number (NAV information from WP 0 to desired WP)	60
So G	Speed Over Ground: Actual speed in relation to the ground.	54
St or E	Store: Storing current Lat./Lon. into WP memory	48
St or Ed	Stored: Storing is completed.	49
U	UTC (Universal Time Coordinated) or GMT	45
WP	Waypoint: Entry number for calculated Lat./Lon.	48

# World Time Difference Table

To display local time, refer to "Adjusting to Local Time". (page 30)



This "World Time Difference Table" shows an outline of time differentials from UTC (GMT).

# Explanation of Terms

---

**A**

## **Almanac (page 40)**

Almanac is the information about locations of all the GPS satellites. Each satellite sends messages all the time. This unit is designed to reduce the calculating time by saving Almanac information.

## **Arrival Confirmation Tone (page 59)**

A long beep sound is heard 8 times to alert the arrival function, when coming within a 0.1 NM radius. After this tone, the unit will start calculating the bearing and range from the present position to the next Waypoint.

**B**

## **Bearing (page 50)**

Direction in degrees relative to Magnetic North, from one location to another location.

**C**

## **Complex Route (page 76)**

This receiver provides 9 routes each of which consists of up to 10 Waypoints. The desired route can be created by assigning the desired Waypoints you want to pass through to your destination. The same Waypoint can be assigned several times in the same route.

## **CONF (page 62)**

CONF is the abbreviation for Confirmation. This is the mode which confirms latitude and longitude entered in Waypoint, WP number entered in the route and bearing/range between any two Waypoints.

## **Continuous Calculation (page 32)**

Once a calculation of a current position is started by pressing the START key, the latest (up-to-date) calculated data will be automatically displayed approx. every 3 seconds.

Appendices

7

## Explanation of Terms (cont.)

---

### **Course Over Ground (COG) (page 54)**

The direction you are moving over the ground, relative to Magnetic North.

### **Cross Track Error (page 55)**

Cross Track Error is the deviation from the intended course (rhumb line which connects the previous Waypoint and the next Waypoint) to the present position.

The perpendicular line from the current position to the course will be displayed by the deviation as "to the right ○○ NM" or "to the left ○○ NM". Up to 99.99 NM (km, M) can be displayed.

### **D**

### **Datum Number (page 28, 95)**

The earth is somewhat oval, not a perfect sphere. The mapping standards should be altered depending on countries or regions to draw a precise map for the specific countries or regions.

A global vision arranged and standardized the different standards all over the world.

This global system is called Datum Number.

A datum number is assigned to each standard, and the datum number makes reciprocal relations between datum numbers clear.

The standard adopted in GPS takes the earth as a rotating oval which has its center in the gravity of the earth.

The latitude, longitude and altitude are calculated by using these standards. This system is called WGS84 (World Geodetic System). Because the information received from the GPS satellites are the data as the standard of WGS, the data should be revised to the datum number of the specific country or region from the WGS84 in order to accord with the data of the map of the specific country or region. This unit is programmed 00 (WGS84) when the shipment is made, therefore the display of this unit does not apply to maps in the world.

This datum number of 00 should be changed to the datum number of each country or region. By entering the desired number after checking the place on a map or a sea chart, the display of this unit will accord with the latitude and longitude on a map. For this unit "00" as a datum number corresponds with WGS84 and "01-92" corresponds with its places all over the world.



**E****ETA (page 58)**

Estimated Time of Arrival is calculated at current speed to destination.

ETA will be displayed when keeping the present heading and speed in Continuous Calculation. ETA will be displayed only when moving in Continuous Calculation. Up to 23 hours 59 minutes and 59 seconds later from the present time will be displayed.

**ETE (page 58)**

Estimated Time Enroute or time to go

ETE will be displayed only when moving in Continuous Calculation.

Up to 99 hours 59 minutes and 59 seconds from the present time will be displayed.

**L****Latitude (page 45)**

The coordinates which indicate a distance north or south from the equator measured in degrees. Latitude is shown by an angle between the equator surface and a line connecting the center of the earth and a point on the earth.

The latitude of the Equator is 0°.

The latitude of the North Pole is 90° N.

The latitude of the South Pole is 90° S.

**Longitude (page 45)**

The coordinates which indicate a distance east or west on the earth. A distance east or west from the Greenwich Meridian (longitude 0°) is shown by an imaginary arc which is drawn between the North and South Pole. East and west longitude are counted from 0° to 180°.

## Explanation of Terms (cont.)

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**M**

### **Magnetic Bearing (page 51)**

The earth itself is a gigantic magnet and the magnetic needle of a compass points to the north and the South Pole by earth's magnetic field.

Magnetic Bearing is used for this unit and displayed by clockwise degrees on the basis of Magnetic North (0°).

Magnetic Bearing is not the same as True Bearing.

**N**

### **NAV (page 52)**

NAV is the abbreviation for Navigation.

Navigation functions include bearing and range from the present position to the destination, COG and SOG, Cross Track Error, ETA and ETE and Fr/to calculation.

**P**

### **POS (page 43)**

POS is the abbreviation for Position.

This mode accesses calculation of the present position in Lat./ Lon., Altitude, bearing and range to the destination, and Date/ Time. You can also instantly store your current position into Waypoint memory.

### **Present Date and Time Display (page 44)**

The accurate information of Universal Time Coordinated is included in the information from the GPS satellites. Once this receiver starts calculating a position by receiving information from the GPS satellites, the internal clock of this unit will be automatically revised to the GPS satellites clock.

### **PROG (page 69)**

PROG is the abbreviation for Programming.

This mode functions by entering latitude and longitude in Waypoint or entering or clearing a route.

---

**R****Range (page 50)**

The distance between two Waypoints, expressed in NM, M, Km.

**Route (page 76)**

Route consists of the Waypoints to be passed through to a destination. A route can be created by utilizing these points. You can make up to nine routes and store up to ten Waypoints in each route. The latitude and longitude of the points to be passed should be entered in Waypoint, and these numbers should be assigned to the route in the desired sequence. The reverse of the route you assigned is also available and designated with an "A".

**S****Single Calculation (page 32)**

Calculation of a current position is made only once by pressing the START key each time. If no key operation is made for 2 minutes after displaying the outcome of calculation, the power will be automatically off. When moving a long distance or using this unit for a long period of time, the battery consumption will be minimized by doing a Single Calculation.

**SOG (page 54)**

The speed which you are actually moving in relation to the ground will be calculated and displayed when moving in Continuous Calculation. The faster, the more accurate calculation figure will be. An incorrect figure will be displayed in a stationary condition.

Up to 999NM/h (km/h, M/h) will be displayed.

## Explanation of Terms (cont.)

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**T**

### **Two Dimensional Calculation**

Two dimensional information of latitude and longitude.

When signals from only three satellites are available after starting the calculation of a current position, only latitude and longitude will be displayed as the two dimensional information. Altitude will not be displayed.

**U**

### **UTC (page 45)**

Universal Time Coordinated

Greenwich Mean Time which is fixed on the Prime Meridian (longitude 0°) of the old Greenwich Astronomical Observatory is now adopted as universal time coordinated.

**W**

### **Waypoint (page 48)**

Waypoints are destinations or locations that are entered into memory to be recalled to utilize the Navigation functions at any time up to 99 Waypoints (1-99) can be stored in non volatile memory.

# World Datum List

To set up a datum number, refer to "Adjusting Datum to Regional Standards".  
(page 28)

Datum Number	Region	Coordinate System
00		WGS84 (standard)
01	Japan Korea Okinawa	TOKYO
02	Ethiopia Mali Senegal Sudan	ADINDAN
03	Somalia	AFGOOYE
04	Bahrain Island	AIN EL ABD 1970
05	Cocos Island	ANNA 1 ASTRO 1965
06	Botswana Lesotho Malawi Swaziland Zaire Zambia Zimbabwe	ARC 1950
07	Kenya Tanzania	ARC 1960
08	Ascension Island	ASCENSION ISLAND 1958
09	Iwo Jima Island	ASTRO BEACON "E"
10	Tern Island	ASTRO B4 SOROL ATOLL
11	St. Helena Island	ASTRO DOS 71/4
12	Marcus Island	ASTRONOMIC STATION 1952
13	Australia Tasmania Island	AUSTRALIAN GEODETIC 1966
14	Australia	AUSTRALIAN GEODETIC 1984
15	Efate Erromango Islands	BELLEVUE (ING)
16	Bermuda Islands	BERMUDA 1957
17	Colombia	BOGOTA OBSERVATORY

## World Datum List (cont.)

Datum Number	Region	Coordinate System
18	Argentina	CAMPO INCHAUSPE
19	Phoenix Islands	CANTON ASTRO 1966
20	South Africa	CAPE
21	Florida Bahama Islands	CAPE CANAVERAL
22	Tunisia	CARTHAGE
23	Chatham Island New Zealand	CHATHAM 1971
24	Paraguay	CHUA ASTRO
25	Brazil	CORREGO ALEGER
26	Sumatora Island Indonesia	DJAKARTA (BATAVIA)
27	Gizo Island New Georgia Islands	DOS 1968
28	Easter Island	EASTER ISLAND 1967
29	Austria Belgium Denmark Finland France Germany Gibraltar Greece Italy Luxembourg Netherlands Norway Portugal Spain Sweden Switzerland	EUROPEAN 1950

Datum Number	Region	Coordinate System
30	Austria Finland Netherland Norway Spain Sweden Switzerland	EUROPEAN 1979
31	Republic of Maldives	GANDAJIKA BASE
32	New Zealand	GEODETIC DATUM 1949
33	Guam Island	GUAM 1963
34	Guadalcanal Island	GUX 1 ASTRO
35	Iceland	HJORSEY 1955
36	Hong Kong	HONG KONG 1963
37	Thailand Vietnam	INDIAN (Part 1)
38	Bangladesh India Nepal	INDIAN (Part 2)
39	Ireland	IRELAND 1965
40	Diego Garcia	ISTS 073 ASTRO 1969
41	Johnston Island	JOHNSTON ISLAND 1961
42	Sri Lanka	KANDAWALA
43	Kerguelen Island	KERGUELEN ISLAND
44	West Malaysia Singapore	KERTAU 1948
45	Cayman Brac Island	L. C. 5 ASTRO
46	Liberia	LIBERIA 1964
47	Philippines	LUZON (Part 1)

## World Datum List (cont.)

Datum Number	Region	Coordinate System
48	Mindanao Island	LUZON (Part 2)
49	Mahe Island	MAHE 1971
50	Salvage Islands	MARCO ASTRO
51	Eritrea Ethiopia	MASSAWA
52	Morocco	MERCHICH
53	Midway Island	MIDWAY ASTRO 1961
54	Nigeria	MINNA
55	Masirah Island Oman	NAHRWAN (Part 1)
56	United Arab Emirates	NAHRWAN (Part 2)
57	Saudi Arabia	NAHRWAN (Part 3)
58	Trinidad and Tobago	NAPARIMA, BWI
59	Contiguous United States	NORTH AMERICAN 1927 (Part 1)
60	Alaska	NORTH AMERICAN 1927 (Part 2)
61	Bahamas	NORTH AMERICAN 1927 (Part 3)
62	San Salvador Island	NORTH AMERICAN 1927 (Part 4)
63	Canada Newfoundland Island	NORTH AMERICAN 1927 (Part 5)
64	Canal Zone	NORTH AMERICAN 1927 (Part 6)



Datum Number	Region	Coordinate System
65	Caribbean Barbados Caicos Islands Cuba Dominican Republic Grand Cayman Jamaica Leeward Islands Turks Islands	NORTH AMERICAN 1927 (Part 7)
66	Central America Belize Costa Rica El Salvador Guatemala Honduras Nicaragua	NORTH AMERICAN 1927 (Part 8)
67	Cuba	NORTH AMERICAN 1927 (Part 9)
68	Greenland Hayes Peninsula	NORTH AMERICAN 1927 (Part 10)
69	Mexico	NORTH AMERICAN 1927 (Part 11)
70	Alaska Canada Central America Contiguous United States Mexico	NORTH AMERICAN 1983
71	Corvo Flores Islands Azores	OBSERVATORIO 1966
72	Egypt	OLD EGYPTIAN
73	Hawaii	OLD HAWAIIAN
74	Oman	OMAN

## World Datum List (cont.)

Datum Number	Region	Coordinate System
75	England Isle of Man Scotland Shetland Islands Wales	ORDNANCE SURVEY OF GREAT BRITAIN 1936
76	Canary Islands	RICO DE LAS NIEVES
77	Pitcairn Island	PITCAIRN ASTRO 1967
78	South Chile (near 53° S)	PROVISIONAL SOUTH CHILEAN 1963
79	Bolivia Chile Colombia Ecuador Guyana Peru Venezuela	PROVISIONAL SOUTH AMERICAN 1956
80	Puerto Rico Virgin Islands	PUERTO RICO
81	Qatar	QATAR NATIONAL
82	South Greenland	QORNOQ
83	Mascarene Island	REUNION
84	Sardinia Island	ROME 1940
85	Argentina Bolivia Brazil Chile Colombia Ecuador Guyana Paraguay Peru Trinidad Venezuela	SOUTH AMERICAN 1969
86	Porto Santo Medeira Islands	SOUTHEAST BASE

---

Datum Number	Region	Coordinate System
87	Faial Graciosa Pico Sao Jorge Terceira Islands Azores	SOUTHWEST BASE
88	Brunei East Malaysia Sarawak Sabah	TIMBALAI 1948
89	Tristan de Cunha	TRISTAN ASTRO 1968
90	Viti Levu Island Fiji Islands	VITI LEVU 1916
91	Marshall Islands	WAKE-ENIWETOK 1960
92	Surinam	ZANDERIJ

# **Saving the Battery Power**

## **Saving Latitude/Longitude**

---

### **Saving the Battery Power**

This unit keeps calculating continuously and consuming the battery power until the power is turned off. (Continuous Calculation)  
However, this unit has an Automatic Power-Off function to save the battery. In order to use this function, programming a Single Calculation is necessary. If no key operation is made for 2 minutes in a Single Calculation the power will be automatically turned off. Automatic Power-Off function does not apply in the occasions listed below.

- Searching satellites to receive signals. (page 45)
- Receiving Almanac information to shorten calculating time. (page 40)

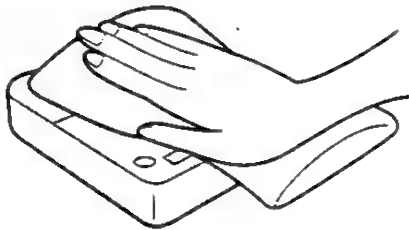
### **Saving Latitude/Longitude**

The entered latitude and longitude in this unit is saved by a lithium battery even in power-off.

- The lithium battery life is approx. 5 years.
- When the lithium battery is depleted, the information you saved will be erased by turning the power off.
- Please do not replace a new lithium battery by yourself. Ask your dealer.

# Maintenance

To clean this unit



Use a soft cloth.

When this unit is very dirty, immerse a cloth in the dilution of dish wash detergent and wring it firmly, then wipe this unit.

Use a dried cloth for completion.

■ Never use the things listed below to clean this unit. (cause of discoloration and deformation.)

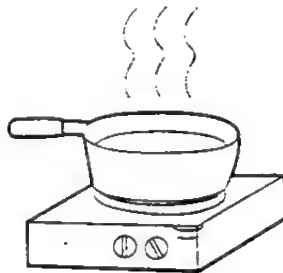
Abrasive Powder, Soap Powder, Wax, Petroleum, Boiling Water, Thinner, Benzine, Alcohol



Abrasive Powder



Soap Powder



Boiling Water



Thinner, Benzine, Alcohol

# Troubleshooting Guide

Please check the items listed below before requesting service.

Consult your Panasonic dealer when you can not solve problems.

Problem	Cause	Remedy	Reference page
No outcome of calculation appears for a long time after receiving signals.	Some obstacles like buildings are surrounding.	Move to a place with no obstacles.	11
	Constellation of GPS satellites is no good.		11
COG and SOG are not displayed.	Single calculation is programmed.	Program continuous calculation. (page 32)	54
ETA is not displayed.			58
ETE is not displayed.			58
Power is not on. (When using rechargeable battery.)	Rechargeable battery is not charged.	Charge rechargeable battery.	15
Power is not on. (When using Alkaline battery.)	AA Alkaline batteries are depleted.	Replace the batteries with new ones.	19
	Battery's polarity (⊕, ⊖) is reversed.	Install batteries correctly.	
Rechargeable battery does not last long.	Charging battery is insufficient.	Charge battery for prescribed time (About 10 hours).	15
Rechargeable battery does not last long even after charging it for prescribed time (About 10 hours).	Life of rechargeable battery is out.	Replace the rechargeable battery with new one. (Consult your Panasonic dealer.)	22

# Specifications

## Main Unit

Receiving Method	5 Channels, Parallel Receiving (1575.42 MHz)
Receiving Sensitivity	-130 dBm
Position Accuracy	15 mRMS (GDOP $\leq$ 6) Position accuracy may be degraded up to 328 feet 2D RMS under the control of the U.S. Department of Defense.
Display Type	2 Lines, 7 Segments, Liquid Crystal Display
Memory Back-up	5 Years (Internal Lithium Battery)
Ambient Temperature	14°F ~ 122°F (-10°C ~ 50°C)
Power Supply	Rechargeable Battery [Lasting Time: Approx. 80 minutes in Continuous Use, at 68°F (20°C)] 5 AA Alkaline Batteries [Battery Life: Approx. 300 minutes in Continuous Use, at 68°F (20°C)]
Dimensions (Width × Depth × Height)	65 × 35 × 131 mm (When using Rechargeable Battery, not including projecting parts) 65 × 52 × 131 mm (When using Alkaline Batteries, not including projecting parts)
Weight	Approx. 240 g (Main Unit) Approx. 330 g (When using Rechargeable Battery) Approx. 420 g (When using Alkaline Batteries)

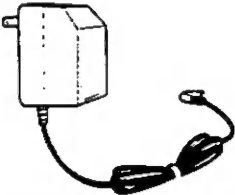

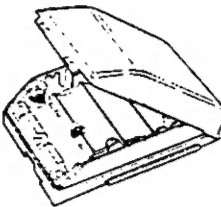
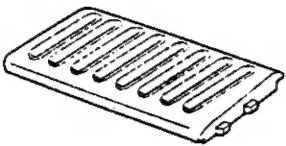


\*The figures of lasting time and battery life are in the case of "screen light is off".

## Battery Charger

Ambient Temperature	50°F ~ 95°F (10°C ~ 35°C)
Dimensions (Width × Depth × Height)	66 × 34 × 130 mm
Weight	Approx. 100 g

# Accessory Order Information

Replacement parts and accessories are available through your local authorized parts distributor. For the authorized distributors in your area, call toll free: 1-800-332-5368.

Part No.	Configuration	Description
KX-G32		AC Adaptor
KX-G36		Battery Charger
KX-G37X		Battery Case for AA Alkaline Batteries
KX-G38X		Rechargeable Nickel Metal Hydride Battery Pack
KX-G40		Cigarette Lighter Plug Adaptor
KX-G51X		Carrying Case



## Product service

Panasonic Servicenters for this product are listed in the servicenter directory. Consult your authorized Panasonic dealer for detailed instructions.

## If you ship the product

Carefully pack and send it prepaid, adequately insured and preferably in the original carton. Attach a postage-paid letter, detailing the complaint, to the outside of the carton. *DO NOT send the product to the Executive or Regional Sales offices. They are NOT equipped to make repairs.*

## For your future reference

Serial No. \_\_\_\_\_ Date of purchase \_\_\_\_\_  
(found on the bottom of the unit)

Names of dealer \_\_\_\_\_

Dealer's address \_\_\_\_\_

**Panasonic Company,**  
**Division of Matsushita Electric Corporation of America**  
One Panasonic Way, Secaucus, New Jersey 07094

**Panasonic Company (West) of America,**  
**Division of Matsushita Electric Corporation of America**  
6550 Katella Avenue, Cypress, California 90630

**Panasonic Sales Company ("PSC"),**  
**Division of Matsushita Electric of Puerto Rico, Inc.**  
San Gabriel Industrial Park, 65th Infantry Avenue, KM 9.5, Carolina,  
Puerto Rico 00630

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